

9. Quantifying Weed Management and Water Usage by Diversified Vegetable Farming Operations in Colorado for Stakeholders and Policy Makers

Mentors: [Mark Uchanski](#), [Adrian Card](#)

Location: Longmont, CO (Boulder County)

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Research/outreach project goals:

1. Quantify and report water usage by diversified mixed vegetable production operations in Colorado to create a water budget for Colorado stakeholders.
2. Empower diversified specialty crops producers to make educated decisions about incorporating integrated weed management tools.

Student learning objectives:

1. Statistically analyze water usage data collected from diversified mixed vegetable production operations in Colorado.
2. Disseminate research results by writing two fact sheets for specialty crops producers.
3. Expand student's professional network through collaboration with Colorado vegetable producers and industry interactions.
4. Gain vegetable crop management experience with Colorado specialty crops.

A student intern is needed to (**research project goal #1**) analyze water usage data collected from diversified mixed vegetable production operations over the past 11 years in Boulder County. The goal of the project is to answer the question, "How much water do mixed vegetable operations annually use?" This is a baseline study to understand water consumption habits by specialty crops producers in Colorado, which has not yet been done. It will help guide policy makers on future water-wise management decisions in Colorado. The internship will occur at the Boulder County Extension office in Longmont. The student intern will need to have his/her own transportation to the Extension office in Boulder County as well as to participating off-site specialty crops farms, when appropriate.

Vegetable crops generally require a relatively large amount of water (1.5' acre) to sustain high yields and high quality. Yet, water conservation is an increasingly important issue along the Front Range. In Boulder County, 13,000 acres are irrigated, of which 700 acres are in vegetables. In addition, the number of vegetable producers is on the rise in Boulder County. There were 92

farms in 2017, which is up from 77 in 2012. This internship will provide support to an ongoing project through Boulder County Extension to help Colorado specialty crops growers understand their water consumption habits.

Furthermore, Boulder County has the goal of having 25% of its leased public lands under organic management by 2020. This means Extension bulletins, fact sheets, and other outreach materials will be needed to support the expanding number certified organic acres. After visiting with vegetable crop growers and wheat farmers last season, it became clear that weed control is a concern for some wanting to enter the organic foods market. Colorado specialty crops producers would benefit from a fact sheet designed to educate growers about additional organic weed control tools. Therefore, a second goal of the internship (**research project goal #2**) is to write a fact sheet on post-emergent herbicides and scale-appropriate implements for organic specialty crops systems.

The goal of this internship is to afford a student the opportunity to have an extension-based learning experience and to develop two timely fact sheets. One fact sheet will focus on water consumption by diversified vegetable crop producers, and will summarize 11 years of data collected from numerous producers; the other will focus on weed control options for organic systems. The intern will be expected to analyze data, evaluate the results, and report findings from the water survey and the weed management data collected from the 2019 Extension internship in Adams County with Thaddeus Gourd and Mark Uchanski.

Many growers have expressed interest in adding organic to their production portfolios, but they need more options for weed control. Our outreach objective would address this stakeholder need by writing up the evaluation of a nonsynthetic desiccant herbicide (a.i. caprylic/capric acid) approved for organic systems. Specialty crops producers would benefit from knowing the level of weed control achieved from post-emergent herbicides for organic systems.

Mentorship philosophy:

We have coordinated mentorships with the CSU Extension Building Farmers program in past years; have mentored numerous graduate students, two Extension interns, and several new Extension staff over the years. Our sense is mentorship first is a match of personalities that are compatible. Second, it is a commitment to listening, asking questions and providing appropriate feedback. It certainly requires time and regular commitment to meeting (e.g. weekly) to make it useful. Finally, the mentee and mentor alike are best benefitted when they approach with a beginner's mind, aware that they may have blind spots that they are simply unaware.

*Housing and travel funds are NOT available for the internship.