UCDAVIS
Graduate Program of
Environmental Policy and Management

Practicum Report

Student name: [redacted]

Partnering Organization (PO): California Department of Food and Agriculture (CDFA), Office of Pesticide Consultation and Analysis (OPCA)

Supervisor(s): [redacted]

1. Describe any differences between your original Practicum Proposal and your actual Practicum to
    a. Questions to be answered/objectives

The following questions were posed in my initial practicum proposal:

- What aspects and characteristics contribute to an effective vegetative buffer?
- What current buffer projects and programs already exist, and how can they be improved?
- What are the most sensitive sites and vulnerable areas in California that are affected by pesticide drift and runoff?
- What common characteristics do sensitive sites share? (i.e. geographic proximity to at-risk individuals and communities, presence of wildlife, pre-existing human and environmental health concerns, etc.)
- What is the best format of a vegetative buffer pesticide drift mitigation program?
- How do we identify and incentivize growers to participate in such a program?
- What concerns do growers have implementing and managing such a program? (i.e. cost, land use, etc.)

While all these questions were answered in some form or another (and some in more detail than others), the questions I anticipated to focus on did change. The scope of buffer effectiveness, existing programs, and sensitive sites indicative in the first 4 questions was anticipated to be a major focus of the practicum, with later consideration given to the final 3 questions. It became evident early on that the first 4 questions would be addressed rather quickly, leaving most of the practicum to focus on the latter 3 questions and general program feasibility. While different than anticipated, this worked out for the best because the literature and research generally supports the effectiveness of vegetative buffers at mitigating pesticide drift. It is also clear that there is a lack of existing programs to protect sensitive sites (defined at schools, hospitals, and nursing homes) from drift. This justifies focusing on the latter 3 questions and objectives to better understand the feasibility of a specific vegetative buffer program, how it could be incentivized, and how growers' concerns could be resolved.

    b. The analytical/methodological approach

Like part a, the methods and analytical approaches initially laid out in my practicum proposal remained the same, although the focus of methods shifted during the practicum. While literature review and research were conducted on buffer effectiveness, sensitive sites, and existing programming, this process

was completed quickly. This literature review and research phase served as an introductory process to familiarize us with the topic, while analytical approach quickly switched to geospatial and economic analysis. We spent much of our practicum processing geospatial data to analyze the proximity of pesticide application fields to sensitive sites. For fields that were within ¼ mile of a sensitive site, vegetive buffers were drawn along the sides of fields adjacent to the site. The total length was multiplied by a uniform value to yield a total acreage of land that would be optimal for buffer implementation. We further calculated costs by considering both the direct costs of buffer labor and implementation, as well as the indirect costs associated with taking land out of production (calculated through commodity values, acreage, and yield). This gave us a final cost estimate. We concluded by recommending policy and program solutions that could achieve these buffer implementations, either through the expansion of existing programs or new legislation. With this said, we did not anticipate the geospatial and economic data analysis to take a major role, but it further served to justify and rationalize our policy/program recommendations. Thus, the scope of our focus and methods did change, but it was for the better.

2. Name and briefly describe the deliverables produced (attach deliverables if available).

Our main deliverables include a feasibility report and a presentation that will be delivered to the Office of Pesticide Consultation and Analysis, as well as other relevant CDFA officials. Our feasibility report details the reviewed literature, methods, analysis, results, and policy/program recommendations of our study. Major elements of this include the estimate of total agricultural land (in acres) that we identify as optimal for buffer implementation, as well as cost-estimates for doing so. These estimates consider both direct material and labor costs for buffer implementation, and the indirect costs associated with forgone profits because land is taken out of production. We conclude with recommendations that would make such a program possible. We will present our findings to OPCA and CDFA officials on June 4th, 2021.

3. How did the project further your individual career objectives?

This project has furthered my career goals by giving me internship and work experience for a state agency. Furthermore, it has given me additional knowledge and exposure to the agricultural sciences and allowed me to analyze the important effects agriculture has on the environmental and public health. I have deeply enjoyed the geospatial and economic analyses of this practicum, and it is equally fulfilling to make policy/program recommendations based on the data collected. I would like to take what I learned from this practicum and explore my opportunities working for a state or federal agency where I am able to use empirically researched methods and data to support effective, feasible policy solutions.