

# Comprehensive Program Review Report



## Program Review - Plant Science

### Program Summary

**2020-2021**

**Prepared by:** Allison Ferry-Abee

**What are the strengths of your area?:** The primary strengths of the Plant Science Program are:

1. The program meets the needs of several different student populations, including students who are working full time and seeking job advancement, students transferring to a four year institution, and full time students pursuing an AS degree. The program focuses on providing rigorous curriculum required by industry standards.
2. The Plant Science Program utilizes the Student Agriculture Experimental Farm (Sage Farm) and Tulare Campus farm to provide practical, hands-on training to all students in the program.
3. Courses in the program meet the prerequisite course requirements for the California Pest Control Advising (PCA) License. PCAs are in high demand in Tulare County, and the majority of Plant Science students (over 80%) are interested in obtaining a PCA license. Courses also partially qualify students to become Certified Crop Advisors (CCAs).
4. The job market for Plant Science students is extremely positive. The California Pest Control Adviser's Association (CAPCA) estimates that for every Plant Science graduate (Associate's or Bachelor's) OR student with a Pest Control Advising license, there are at least 3 jobs available in California (Krista Frelinger, Education Committee Chair, CAPCA, personal communication). Thirty nine percent of Plant Science students are currently employed as field checkers for a licensed Pest Control Adviser, and COS Plant Science acts as an important community liaison between employers and both current students and graduates seeking employment. COS offers all of the prerequisite classes required to take the Pest Control Advising exam, and the classes have been approved by CA Department of Pesticide Regulation (who licences PCAs) as appropriate prerequisite courses.
5. Industry awareness and support for the Plant Science program has grown in the last several years, and the program has gained several valuable donations from community members for the new Student Agricultural Experimental Farm, (SAG E Farm). The rigor of the curriculum has also increased to match industry expectations and prepare students to take the Pest Control Adviser's exam if they choose.

**What improvements are needed?:** Primary Improvements Needed Are:

1. Increase student enrollment in the program. A majority of the potential student population seeking PCA licenses are students who work full time during the day and can attend classes only at night. This is evidenced by increased student enrollment rates in night classes versus afternoon classes. Scheduling of classes must be changed to accommodate the majority of students.
2. Increase in degrees and certificates. A multitude of opportunities exist for Plant Science students. Sixty seven percent of students in Plant Science classes are taking them as prerequisites to take the Pest Control Adviser exam. Before anyone can take the exam, they must pass 40 units of specific classes in Agricultural and Biological Science (with an emphasis in Plant Science). Many students utilize Plant Science courses at COS to successfully meet this goal. However, a degree is not required to take the exam, and so the significant career improvement of these students is not reflected by obtaining a certificate or degree. A Pest Management Certificate and degree needs to be created to better reflect the achievements of students. Fifty two percent of Plant Students have expressed interest in a Pest Management certificate or degree.
3. Instructor Continuing Education. Continued training of the Plant Science instructor to maintain knowledge of current (and

ever-changing) industry, safety and environmental standards.

**Describe any external opportunities or challenges.:** External Challenges:

1. Due to COVID-19 restrictions, course lecture, discussion, and some activities must be converted to an online format. This is extremely time consuming. Teaching online utilizes different techniques.

**Overall SLO Achievement:** SLO achievement was assessed in 9 classes for the 2019-20 period. All achievement was satisfactory (above 70%) and was consistent with results from previous years.

**Changes Based on SLO Achievement:** SLOs will be changed in four classes (PLSI 105, AG 125, PLSI 111 and PLSI 012) to update them to current standards and teaching methods of the instructor. All courses will continue to be monitored and assessed.

**Overall PLO Achievement:** Overall success rates have increased from 71% in 2017-18 to 82% in 2019-20. Students have been given more opportunities for hands-on laboratory activities; increased exposure to industry standard techniques has increased student mastery.

FTES/FTEF ratios have increased from 9.51 in 2017-18 to 10.33 in 2019-20, indicating an increase in student enrollment in the program. This is evidence of changing program and class scheduling to meet student demand.

**Changes Based on PLO Achievement:** Increasing the number of evening classes offered is needed and it is predicted that this change will further increase enrollment.

**Outcome cycle evaluation:** In the last three years, significant improvements have been made in curriculum, student assessment, and student learning opportunities.

## Action: 2020-2021, Update SLOs for PLSI 012, AG 125, PLSI 111 and PLSI 105

The program will develop new SLOs for PLSI 012 (Introduction to Fruit Science), AG 125 (Principles of Pesticide Use), PLSI 111 (Citrus Production), and PLSI 105 (Weeds and Poisonous Plants).

**Leave Blank:**

**Implementation Timeline:** 2020 - 2021

**Leave Blank:**

**Leave Blank:**

**Identify related course/program outcomes:** District Objective 2.1

**Person(s) Responsible (Name and Position):** Allison Ferry-Abbe

**Rationale (With supporting data):** Original SLOs for the course were developed several years ago, and will be updated to current industry standards.

**Priority:** High

**Safety Issue:** No

**External Mandate:** No

**Safety/Mandate Explanation:**

### Resources Description

None (Active)

**Why is this resource required for this action?:**

**Notes (optional):**

**Cost of Request (Nothing will be funded over the amount listed.):**

### Link Actions to District Objectives

District Objectives: 2018-2021

**District Objective 2.1** - Increase the percentage of students who earn an associate degree or certificate (CTE and Non-CTE) by 5 percentage points over three years

**District Objective 2.4** - By 2021, Increase the percentage of CTE students who achieve their employment objectives by 5 percentage points

## Action: 2020-2021, Develop Online Compatible Curriculum for Lecture

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## and Discussion in PLSI 106, PLSI 110, PLSI 113 and AG 003

Hybrid courses offer students more flexibility in times to complete course lecture material, especially for non-traditional students who work full time or are responsible for childcare. They also maintain hands-on learning activities by offering in-person labs. However, curriculum must be developed that is appropriate for an online format and maintains student interest. This action proposes development of online lecture material for the following courses: PLSI 106 (Fertilizers and Soil Amendments), PLSI 110 (Integrated Pest Management), PLSI 113 (Introduction to Viticulture) and AG 003 (Economic Entomology).

**Leave Blank:**

**Implementation Timeline:** 2020 - 2021

**Leave Blank:**

**Leave Blank:**

**Identify related course/program outcomes:**

**Person(s) Responsible (Name and Position):** Allison Ferry-Abee

**Rationale (With supporting data):**

**Priority:** High

**Safety Issue:** No

**External Mandate:** No

**Safety/Mandate Explanation:**

### *Link Actions to District Objectives*

District Objectives: 2018-2021
<b>District Objective 2.1</b> - Increase the percentage of students who earn an associate degree or certificate (CTE and Non-CTE) by 5 percentage points over three years
<b>District Objective 2.4</b> - By 2021, Increase the percentage of CTE students who achieve their employment objectives by 5 percentage points

## Action: 2020-2021, Create Demonstration Videos for AG 003, PLSI 001, PLSI 106 and AG 125

Due to offering hybrid classes (online lecture, in-person lab) there is less time to demonstrate topic-specific principles in person with students. Additionally, because of the specialized nature of California agriculture, there are some concepts which are not available on internet platforms (such as YouTube). This action proposes creating videos for topics which cannot be found elsewhere.

**Leave Blank:**

**Implementation Timeline:** 2020 - 2021

**Leave Blank:**

**Leave Blank:**

**Identify related course/program outcomes:**

**Person(s) Responsible (Name and Position):** Allison Ferry-Abee

**Rationale (With supporting data):**

**Priority:** High

**Safety Issue:** No

**External Mandate:** No

**Safety/Mandate Explanation:**

### *Resources Description*

<b>Equipment - Instructional</b> - Video recording and editing equipment. (Active)
<b>Why is this resource required for this action?:</b>
<b>Notes (optional):</b>
<b>Cost of Request (Nothing will be funded over the amount listed.):</b> 2015
<b>Related Documents:</b>
<a href="#">Costs Videography ag department.xlsx</a>

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## Link Actions to District Objectives

District Objectives: 2018-2021
<b>District Objective 2.1</b> - Increase the percentage of students who earn an associate degree or certificate (CTE and Non-CTE) by 5 percentage points over three years
<b>District Objective 2.4</b> - By 2021, Increase the percentage of CTE students who achieve their employment objectives by 5 percentage points

## Action: 2019-2020, Increase Student Safety at SaGE Farm

As use of the Student Agricultural Experimental Farm (SAGE Farm) is increasing, the need for equipment to maintain student safety during pesticide and fertilizer application has increased.

**Leave Blank:**

**Implementation Timeline:** 2019 - 2020

**Leave Blank:**

**Leave Blank:**

**Identify related course/program outcomes:**

**Person(s) Responsible (Name and Position):** Allison Ferry-Abee, Faculty

**Rationale (With supporting data):**

**Priority:** High

**Safety Issue:** Yes

**External Mandate:** No

**Safety/Mandate Explanation:** Pesticide application and storage is an essential part of commercial agricultural practice. Students need materials to practice safe pesticide application and storage.

<b>Update on Action</b>
<b>Updates</b>
<b>Update Year:</b> 2020 - 2021
<b>Status:</b> Action Completed
VTEA and above base funding was received to complete this project. Safety equipment has been installed at SAGE Farm.
<b>Impact on District Objectives/Unit Outcomes (Not Required):</b>

10/12/2020

## Resources Description

<b>Equipment - Instructional</b> - Pesticide safety equipment, including storage cabinets and signage (Active)
<b>Why is this resource required for this action?:</b> Pesticide safety equipment is required for both the proper storage and application of pesticides used at the Student Ag Experimental Farm (SAGE) and also in the instruction of pesticide safety to students. Because of the remote location of SAGE farm (0.68 miles from Building B and 0.25 miles from the farm shop), safety equipment cannot be shared with other units.
<b>Notes (optional):</b>
<b>Cost of Request (Nothing will be funded over the amount listed.):</b> 8736
<b>Related Documents:</b>
<a href="#">SAGE Farm Pesticide Safety Equipment.xlsx</a>

## Link Actions to District Objectives

District Objectives: 2018-2021
<b>District Objective 2.1</b> - Increase the percentage of students who earn an associate degree or certificate (CTE and Non-CTE) by 5 percentage points over three years
<b>District Objective 2.4</b> - By 2021, Increase the percentage of CTE students who achieve their employment objectives by 5 percentage points

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## Action: 2019-2020, Introduction to Plant Science SLO Updates

The program will develop new SLOs for PLSI 001, Introduction to Plant Science.

**Leave Blank:**

**Implementation Timeline:** 2019 - 2020

**Leave Blank:**

**Leave Blank:**

**Identify related course/program outcomes:** District Objective 2.1

**Person(s) Responsible (Name and Position):** Allison Ferry-Abbe, Faculty

**Rationale (With supporting data):** Original SLOs for the course were developed several years ago, and will be updated to current industry standards.

**Priority:** High

**Safety Issue:** No

**External Mandate:** No

**Safety/Mandate Explanation:**

### Update on Action

#### Updates

**Update Year:** 2020 - 2021

10/12/2020

**Status:** Action Completed

New SLOs were created for PLSI 001 and are currently being reviewed by the curriculum committee for approval.

**Impact on District Objectives/Unit Outcomes (Not Required):**

## Link Actions to District Objectives

District Objectives: 2018-2021

**District Objective 2.1** - Increase the percentage of students who earn an associate degree or certificate (CTE and Non-CTE) by 5 percentage points over three years

**District Objective 2.4** - By 2021, Increase the percentage of CTE students who achieve their employment objectives by 5 percentage points

## Action: 2018-2020, Increase in Degrees and Certificates

Create a Pest Management Certificate and Degree in order to track student achievement in Plant Science.

**Leave Blank:** Essential for Operation

**Implementation Timeline:** 2019 - 2020

**Leave Blank:** 09/01/2018

**Leave Blank:** 09/01/2019

**Identify related course/program outcomes:** District Objectives 2.1 and 2.4

**Person(s) Responsible (Name and Position):** Allison Ferry-Abbe

**Rationale (With supporting data):** A multitude of opportunities exist for Plant Science students. 67% of students in Plant Science classes are taking them as prerequisites to take the Pest Control Adviser exam. Before anyone can take the exam, they must pass 40 units of specific classes in Agricultural and Biological Science (with an emphasis in Plant Science). Many students utilize Plant Science courses at COS to successfully meet this goal. However, a degree is not required to take the exam, and so the significant career improvement of these students is not reflected by obtaining a certificate or degree. A Pest Management Certificate and degree needs to be created to better reflect the achievements of students. 52% of Plant Students have expressed interest in a Pest Management certificate or degree.

**Priority:** High

**Safety Issue:** No

**External Mandate:** No

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## Safety/Mandate Explanation:

### Update on Action

#### Updates

**Update Year:** 2020 - 2021

10/12/2020

**Status:** Continue Action Next Year

Two certificates (a core Plant Health certificate with 18 units and a more complete PCA Preparation certificate with 42 units) were discussed with the Plant Science committee and approved. Course requirements and sequencing were developed for the Plant Health certificate and for the agriculture classes in the PCA Preparation certificate. The PCA preparation certificate requires more preparation to determine optimal sequencing for the non-agriculture classes. It is important for students to be able to obtain all of the necessary courses within 2 years.

**Impact on District Objectives/Unit Outcomes (Not Required):**

## Resources Description

No additional resources required (Active)

**Why is this resource required for this action?:**

**Notes (optional):**

**Cost of Request (Nothing will be funded over the amount listed.):**

## Link Actions to District Objectives

District Objectives: 2018-2021

**District Objective 2.1** - Increase the percentage of students who earn an associate degree or certificate (CTE and Non-CTE) by 5 percentage points over three years

**District Objective 2.4** - By 2021, Increase the percentage of CTE students who achieve their employment objectives by 5 percentage points

## Action: 2018-2020, Plant Pathology Curriculum Development

Proposal and creation of a PLSI Introduction to Plant Pathology course.

**Leave Blank:** Essential for Operation

**Implementation Timeline:** 2019 - 2020

**Leave Blank:**

**Leave Blank:**

**Identify related course/program outcomes:** District Objectives 2.4 and 2.1

**Person(s) Responsible (Name and Position):** Allison Ferry-Abee

**Rationale (With supporting data):** This course will give students the opportunity to take a class that covers a key aspect of plant health, cultivation, and becoming a pest control adviser. It is a gap in our program that must be filled.

**Priority:** High

**Safety Issue:** No

**External Mandate:** No

**Safety/Mandate Explanation:**

### Update on Action

#### Updates

**Update Year:** 2020 - 2021

10/12/2020

**Status:** Continue Action Next Year

Necessary course materials (microscope slides) were funded through a Strong Workforce grant. A consumables budget to teach the course has also been developed. Course topics, sample assignments, and SLOs were created, and we are waiting for them to

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be reviewed at the next Plant Science Committee meeting. After they have been reviewed the course will be submitted in CourseLeaf for Curriculum Committee Approval.

**Impact on District Objectives/Unit Outcomes (Not Required):**

## Resources Description

**Equipment - Instructional** - Laboratory equipment, including fungal microscope slides, is needed to illustrate key principles of plant pathology. (Active)

**Why is this resource required for this action?:**

**Notes (optional):**

**Cost of Request (Nothing will be funded over the amount listed.):** 1018

**Related Documents:**

[Needs Fill Curriculum Gap.xlsx](#)

## Link Actions to District Objectives

District Objectives: 2018-2021

**District Objective 2.1** - Increase the percentage of students who earn an associate degree or certificate (CTE and Non-CTE) by 5 percentage points over three years

**District Objective 2.4** - By 2021, Increase the percentage of CTE students who achieve their employment objectives by 5 percentage points