Comprehensive Program Review
Report

Program Review - Plant Science

Program Summary

2018-2019

Prepared by: Allison Ferry-Abee - 2018

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

Overall:
The Plant Science program has one full-time faculty member and several adjuncts. It has also had two different full time faculty over the course of 3 years, including a faculty member on maternity leave in Spring 2018. Despite this, FTES increased from 21.47 to 26.40 in 2018. FTEF also increased from 1.75 in 2016 to 2.78 in 2018. The Plant Science program is extremely dedicated to offering hands-on, rigorous opportunities for students that meet industry expectations.

Student Success:
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.

Academic Quality:
A 3-acre section of the Tulare farm has been set aside for instructional purposes. A plan for the land has been developed, and planting citrus and stonefruit trees, and grapevines will begin Spring 2019. This will be a valuable opportunity for students to gain hands-on expertise in pest control, horticultural practices and applied scientific research. The partnership with the commercial farm on the Tulare campus has also increased, and is currently used for instruction when possible. Because of this, the number of hands-on instructional labs has increased in the past year.

External Support:
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, (SAgE 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?: Improvements needed in the Plant Science Program include:

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.
Increase Student Enrollment:
From 2016 to 2018, productivity decreased from 12.27 to 9.51. This was primarily due to several low-enrolled classes. Based on student feedback, this was due to changes in class times. Many Plant Science students work full time in the Ag industry, and cannot take morning or early afternoon classes. Class times need to be changed to late afternoon and evening classes when possible to meet student needs. Additionally, increased awareness of the Plant Science program at COS is needed, including in agricultural trade magazines, and through updates of the Plant Science program website and brochures.

Develop Opportunities for Hands-On Learning:
Continued development of the Student Agricultural Experimental Farm is required for it’s success and utilization for student needs, including equipment and support personnel. Students need specific laboratory experiences to be prepared for work as a PCA, farm manager, or related career.

Fill Curriculum Gap:
A gap in student preparation exists in pest management of diseases of crops. An Introduction to Plant Pathology course needs to be developed to meet industry expectations.

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.: Some of the external opportunities for the Plant Science Program include: Increased need for trained program completers to enter the labor force. As the demand for a trained agricultural labor force increases, student enrollment in training programs may increase.

Potential for increased student outreach and recruitment from local area high schools. The local area high schools continue to maintain strong Agricultural Education Programs. This presents an opportunity to recruit students from those local programs.

External challenges of the Plant Science Program include:
The ability to provide courses that qualify for the State of California Pest Control Adviser’s examination. Additional resources will be needed to maintain courses that qualify for the State Examination for Pest Control Advisers and Qualified Pesticide Applicators relevant and in accordance to state standards.

Overall SLO Achievement: The current faculty member is in her 2nd year as a full-time faculty member and is coming off a spring semester maternity leave; As such, she recognizes that as she teaches each of the class she will be evaluating all of the SLOs and rewriting each of them as she evaluates and works with industry on the courses.

Changes Based on SLO Achievement: SLOs for each of the courses are being evaluated as each of the courses are taught for the first time.

Overall PLO Achievement: The faculty member is working with industry advisories and knowledge of the 3rd party PCA licensing exams to ensure PLOs meet industry standards.

Changes Based on PLO Achievement: PLOs will be evaluated as the instructor has the opportunity to teach all courses in the program.

Outcome cycle evaluation: A Program Outcomes assessment cycle was developed in 2014 and is being implemented. However, that sequence will be evaluated so that all of the courses are brought up to date within the next year.

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**Action: 2018-2019, Objective 1: Increase in Degrees and Certificates**

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

**Status (Priority starting in 2018):** Essential for Operation

**Implementation Timeline:** 2018 - 2019

**Start Date (Leave Blank):** 09/01/2018

**Completion Date (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-Abee

**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  
**Safety/Mandate Explanation:**

#### Resources Description

| No additional resources required (Active) |
| Why is this resource required for this action?: |
| Notes (optional): |
| Cost Estimate: |

#### 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: 2018-2019, Objective 2: Develop Opportunities for Hands-On Learning

Increase student opportunities for hands-on learning by providing industry-standard preparation for students at the Student Ag Experimental Farm (SAgE Farm).

**Status (Priority starting in 2018):** Essential for Operation  
**Implementation Timeline:** 2018 - 2019  
**Start Date (Leave Blank):** 08/01/2018  
**Completion Date (Leave Blank):** 08/01/2019  
**Identify related course/program outcomes:** All Plant Science PLOs and multiple course SLOs, including PLSI 001, PLSI 012, PLSI 111  
**Person(s) Responsible (Name and Position):** Allison Ferry-Abee  
**Rationale (With supporting data):** Primary jobs for Plant Science students are closely tied to current commodity values of farm products. The top plant agricultural commodities in Tulare County in 2017 were (in order of farmgate value) grapes, oranges, tangerines, pistachios, almonds and peaches (2017 Tulare County Agricultural Commissioner’s Report, attached). Providing hands-on experience with these crops is a requirement for preparing students for the workforce. It will also help to meet all Plant Science SLOs and multiple class PLOs (see above).  
**Priority:** High  
**Safety Issue:** No  
**External Mandate:** No  
**Safety/Mandate Explanation:**

#### Resources Description

| Equipment - Instructional - A vineyard trellis for growing grapes. (Active) |
| Why is this resource required for this action?: To improve student success in all aspects of Viticulture, there must be a vineyard to allow students the hands-on experience of all stages in growth and production. |
| Notes (optional): |
| Cost Estimate: 5400 |
Why is this resource required for this action?: Student’s will engage in maintenance and care of the Vines and Trees in the Student Ag Experimental Farm as well as the Almond Orchard. The Airblast sprayer is a basic piece of equipment for maintenance of these 55 acres of trees and vines. The experience of using and understand the purpose and proper protocols of using this sprayer is critical for students in the Plant Science program.

Notes (optional):
Cost Estimate: 28191
Related Documents:
Quote Rears Power Blast PB633ST.pdf

Why is this resource required for this action?: A variety of equipment is needed for each student to have the hand-on experience in almost every class in the PLSI curriculum. To improve student success in crop cultivation and pesticide safety and application, equipment is required for multiple classes, including: PLSI 001, PLSI 113, PLSI 012, PLSI 110, PLSI 106, AG 125 and PLSI 111.

Notes (optional):
Cost Estimate: 3200

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: 2018-2019, Objective 3: Plant Pathology Curriculum Development

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

Status (Priority starting in 2018): Essential for Operation

Implementation Timeline: 2018 - 2019
Start Date (Leave Blank): 08/20/2018
Completion Date (Leave Blank): 01/01/2019

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:

Resources Description

Equipment - Instructional - Laboratory equipment, including fungal microscope slides, is needed to illustrate key principles
Program Review - Plant Science

of plant pathology.  (Active)

Why is this resource required for this action?:

Notes (optional):

Cost Estimate: 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

Action: 2018-19, Objective 4: Plant Science Laboratory PLOs

Students need specific laboratory experiences to be prepared for work as a PCA, farm manager, or related career.

**Status (Priority starting in 2018):** Essential for Operation

**Implementation Timeline:** 2018 - 2019

**Start Date (Leave Blank):** 11/01/2018

**Completion Date (Leave Blank):** 06/01/2019

**Identify related course/program outcomes:** The following classes are critical in meeting the PLOs for Plant Science: PLSI 001 Introduction to Plant Science, PLSI 110 Integrated Pest Management, AG 003 Economic Entomology, PLSI 105 Weeds and Poisonous Plants, PLSI 106 Fertilizers and Soil Amendments, AG 125 Principles of Pesticide Use, PLSI 111 Citrus Production, PLSI 012 Introduction to Fruit Science, and PLSI 113 Introduction to Viticulture.

**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**

**Equipment - Instructional** - Various laboratory equipment for multiple classes. A breakdown of specific equipment and the classes they pertain to is included in the 2018-19 Documents folder. (Active)

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

Notes (optional):

Cost Estimate: 7500

Related Documents:

PLSI Laboratory SLOs Breakdown.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

Program Review - Plant Science

Survey key industry needs for trained plant science personnel in the areas of crop production and pest management.

Status (Priority starting in 2018): New Action
Implementation Timeline: 2018 - 2019
Start Date (Leave Blank): 08/28/2018
Completion Date (Leave Blank): 07/01/2019
Identify related course/program outcomes: District Outcome 2.4
Person(s) Responsible (Name and Position): Allison Ferry-Abee
Rationale (With supporting data): The goal for this action is to ensure that current curriculum and courses are adequately preparing students for careers in Plant Science. Based on the survey results, this may lead to new course development, changes in curriculum and/or department goals. It will also provide relevant data for justification of course improvement.

2018-19
During 2018-2019, I will contact the Office of Research Planning and Institutional Effectiveness to explore how they might help with this goal, and funding requirements for the action. I will also begin to identify and compile a list of key stakeholders to send the survey to.

2019-20
In 2019-2020, I will request funding to complete and analyze survey results. I will also formulate the survey questions, and send the survey to stakeholders.

2020-21
In 2020-21, I will work with the Office of Research Planning and Institutional Effectiveness to compile and analyze survey results. Based on these results, I will formulate future Plant Science Program recommendations for improvement.

Priority: High
Safety Issue: No
External Mandate: No
Safety/Mandate Explanation:

Link Actions to District Objectives

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Increase enrollment in the Plant Science Program by 10% by 2020.

Status (Priority starting in 2018): New Action
Implementation Timeline: 2018 - 2019
Start Date (Leave Blank): 08/26/2018
Completion Date (Leave Blank): 06/01/2019
Identify related course/program outcomes: District Objective 1.1
Person(s) Responsible (Name and Position): Allison Ferry-Abee
Rationale (With supporting data): Three areas impeding growth of enrollment in the Plant Science program are: 1) high school students are unaware of the opportunities for careers in Plant Science, 2) the public and potential students are unaware that the Plant Science Program meets job and education expectations for careers in plant science (including for Pest Control Advisers) and 3) industry is unaware that COS has a strong Plant Science program and that there are opportunities for them to recruit COS Plant Science graduates. I would like to increase awareness of the COS Plant Science program in all three areas by recruiting high school students, developing relationships with key plant science industry members and updating the Plant Science website and promotional materials.
Program Review - Plant Science

2018-2019
Action Items: 1) Meet with at least 5 major industry contacts regarding the Plant Science program and discuss the program, potential new students, and student opportunities for careers. 2) Price the costs for advertising the program in trade magazines. 3) develop a press release about the Plant Science program and 4) Identify at least 20 key sources to contact regularly about upcoming classes in the Plant Science program.

2019-2020
Action Items: 1) Better understand who at COS is responsible for the Plant Science website development and work with them to improve the information available on the website and increase functionality. 2) Send out a press release to trade magazines. 3) Send flyers of upcoming classes and schedules to industry identified in 2018-2019 action item 4. 4) Develop a 50 minute and 20 minute classroom presentation suitable for high school students which emphasizes careers in Plant Science and includes a hands-on activity.

2020-2021
Action Items:1) Continue to send flyers to industry 2) Identify potential schools interested in hosting a class visit from COS. 3) Give presentations about COS and the Plant Science program to at least 5 schools.

Priority: High
Safety Issue: No
External Mandate: No
Safety/Mandate Explanation:

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<th>Status: Continue Action Next Year</th>
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Action is continuing as part of a three year project. Initial communication with the office of research began and is continuing.

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