University of Hawaii Maui College
2011 Annual Report of Instructional Program Data

Agriculture and Natural Resources

Program Mission:

Program Mission:

We envision a program that will provide high quality instruction in agriculture, horticulture and natural resource management with an emphasis on sustainability.

Part I: Program Quantitative Indicators

Overall Program Health: Cautionary

Majors Included: AG

	Demand Indicators	Program Year			Demand Health Call
		08-09	09-10	10-11	
1	New & Replacement Positions (State)	376	267	247	Cautionary
2	New & Replacement Positions (County Prorated)	22	51	54	
3	Number of Majors	31	52	57	
4	SSH Program Majors in Program Classes	164	401	397	
5	SSH Non-Majors in Program Classes	281	377	252	
6	SSH in All Program Classes	445	778	649	
7	FTE Enrollment in Program Classes	15	26	22	
8	Total Number of Classes Taught	14	16	14	

	Efficiency Indicators	Program Year			Efficiency Health Call
		08-09	09-10	10-11	
9	Average Class Size	11.4	15.6	14.7	Healthy
10	Fill Rate	63%	93%	94%	
11	FTE BOR Appointed Faculty	2	2	2	
12	Majors to FTE BOR Appointed Faculty	15.3	25.8	28.5	
13	Majors to Analytic FTE Faculty	24.2	33.1	38.5	
13a	Analytic FTE Faculty	1.3	1.6	1.5	
14	Overall Program Budget Allocation	Not Reported	$185,273	$190,652	
14a	General Funded Budget Allocation	Not Reported	$185,273	$190,652	
14b	Special/Federal Budget Allocation	Not Reported	$0	$0	
15	Cost per SSH	Not Reported	$238	$294	
16	Number of Low-Enrolled (<10) Classes	5	4	4	

	Effectiveness Indicators	Program Year			Effectiveness Health Call
		08-09	09-10	10-11	
17	Successful Completion (Equivalent C or Higher)	83%	72%	69%	Cautionary
18	Withdrawals (Grade = W)	3	9	7	
19	Persistence (Fall to Spring)	56%	67%	64%	
20	Unduplicated Degrees/Certificates Awarded	3	9	9	
20a	Degrees Awarded	2	1	2	
20b	Certificates of Achievement Awarded	1	0	0	
20c	Academic Subject Certificates Awarded	0	0	0	
20d	Other Certificates Awarded	1	9	17	
21	Transfers to UH 4-yr	1	1	0	
21a	Transfers with credential from program	0	0	0	
21b	Transfers without credential from program	1	1	0	

	Distance Education: Completely On-line Classes	Program Year		
		08-09	09-10	10-11
22	Number of Distance Education Classes Taught	0	0	0
23	Enrollment Distance Education Classes	0	0	0
24	Fill Rate	0%	0%	0%
25	Successful Completion (Equivalent C or Higher)	0%	0%	0%
26	Withdrawals (Grade = W)	0	0	0
27	Persistence (Fall to Spring Not Limited to Distance Education)	0%	0%	0%

	Perkins IV Core Indicators 2009-2010	Goal	Actual	Met
28	1P1 Technical Skills Attainment	90.05	90.00	Not Met
29	2P1 Completion	44.50	20.00	Not Met
30	3P1 Student Retention or Transfer	55.50	70.37	Met
31	4P1 Student Placement	50.50	25.00	Not Met
32	5P1 Nontraditional Participation	16.00	42.59	Met
33	5P2 Nontraditional Completion	15.10	54.55	Met

Last Updated: November 9th, 2011

Part II: Analysis of the Program

A. Institutional Data 5 year

Demand Indicators		Academic Year				Demand Health Call 10-11	
		06-07	07-08	08-09	09-10	10-11	
1	New & Replacement Positions (State)	n/a	1	376	267	247	Cautionary
2	New & Replacement Positions (County Prorated)	n/a	0	22	51	54	
3	Number of Majors	31	37	31	52	57	
4	SSH Program Majors in Program Classes	113	80	164	401	397	
5	SSH Non-Majors in Program Classes	98	113	281	377	252	
6	SSH in All Program Classes	221	193	445	778	649	
7	FTE Enrollment in Program Classes	14.07	12.87	15	26	22	
8	Total Number of Classes Taught	8	8	14	16	14	

Efficiency Indicators		Academic Year					Efficiency Health Call 10-11
		06-07	07-08	08-09	09-10	10-11	
9	Average Class Size	9.63	10.88	11.4	15.6	14.7	
10	Fill Rate	56.62	54.04	63%	93%	94%	
11	FTE BOR Appointed Faculty	n/a	2	2	2	2	
12	Majors to FTE BOR Appointed Faculty	n/a	18.50	15.3	25.8	28.5	

13	Majors to Analytic FTE Faculty	22.14	29.13	24.2	33.1	38.5	**Healthy**
13a	Analytic FTE Faculty	n/a	n/a	1.3	1.6	1.5	
14	Overall Program Budget Allocation	No report	No report	No report	$185,273	$190,652	
14a	General Funded Budget Allocation	No report	No report	No report	$185,273	$190,652	
14b	Special/Federal Budget Allocation	No report	No report	No report	$0	$0	
15	Cost per SSH	No report	No report	No report	$238	$294	
16	Number of Low-Enrolled (<10) Classes	3	6	5	4	4	

Effectiveness Indicators			**Academic Year**				**Effectiveness Health Call**
		06-07	**07-08**	**08-09**	**09-10**	**10-11**	**10-11**
17	Successful Completion (Equivalent C or Higher)	n/a	n/a	83%	72%	69%	**Cautionary**
18	Withdrawals (Grade = W)	n/a	n/a	3	9	7	
19	Persistence (Fall to Spring)	n/a	n/a	56%	67%	62%	
20	Unduplicated Degrees/Certificates Awarded	n/a	n/a	8	9	9	
20a	Degrees Awarded	6	3	6	1	2	
20b	Certificates of Achievement Awarded	0	0	3	0	0	
20c	Academic Subject Certificates Awarded	0	0	0	0	0	
20d	Other Certificates Awarded	n/a	n/a	16	9	17	
21	Transfers to UH 4-yr	1	6	1	1	0	
21a	Transfers with credential from program	n/a	n/a	0	0	0	

21b	Transfers without credential from program	n/a	n/a	1	1	0	

1.

A. Analysis of Institutional Data:

In the five year period, student demand numbers increased significantly from the 08-09 academic year as illustrated by the following table:

	Demand Indicators	**Academic Year**		
		08-09	**09-10**	**% increase**
3	Number of Majors	31	52	68%
4	SSH Program Majors in Program Classes	164	401	144%
5	SSH Non-Majors in Program Classes	281	377	34%
6	SSH in All Program Classes	445	778	75%
7	FTE Enrollment in Program Classes	15	26	73%

The number of majors increased slightly in 10-11. SSH numbers dropped slightly but two less courses were taught so this might be expected. Overall demand remained stronger than it was four and five years ago. Both majors and jobs increased slightly in 10-11. However As the health call is #3/#2 it requires that majors be 1.5 times the number of job openings to be considered healthy. (if job openings had decreased to the 08-09 level the call would be Healthy! However I feel better to have more job openings rather than less)

The Health call for Effectiveness was also cautionary. The program needs to continue to work on student success so that persistence rates and certificates and degree earnings increase. We have instituted a program orientation. In Fall 09 it was combined with AJ. This year we did our own which I feel was more successful in attracting our majors. We have worked harder at providing group advising with the counselor prior to Spring registration and working to get students to pick a degree path so that they work toward a particular degree. With three potential Associates degrees within Agriculture and Natural Resources, students can get sidetracked taking an Agriculture course they like but does not apply to their degree or miss taking a required class that is only offered every other year. So tighter counseling is needed. As we get our support personnel on board from two grants we should also be able to do a better job directly tracking and guiding students. Hopefully we will see these efforts bear fruit in the next year or two.

Perkins data shows that we are strong at serving the non-traditional students. We also just barely missed by 0.05% the technical skills attainment goal which is probably not significant. Once again completion and persistence are our weak links. As the campus focuses on these issues (achieving the dream initiatives for example) and our efforts noted above, we hope to improve those outcomes.

Part III: Action Plan

Assessment Plan

The Assessment plan was implemented in Spring 2010. Between 2006 and Fall 2009 the PLO's were not assessed in the current manner so no data is available from those years.

Associate in Applied Science Sustainable Tropical Crop Production

PLO	SP 2010	F 2010	Sp 2011	F 2011	SP 2012	F 2012	Sp 2013
1	AG 230				AG 230		
2	AG 251	AG 200		AG 200 and/or AG 235	AG 251	AG 200	
3		AG 174	AG 281			AG 174	AG 281

Associate in Applied Science Horticulture and Landscape Maintenance

PLO	SP 2010	F 2010	Sp 2011	F 2011	SP 2012	F 2012	SP 2013
1	AG 230				AG 230		
2	AG 251	AG 200		AG 200 and/or AG 235	AG 251	AG 200	
3		AG 174	AG 281			AG 174	AG 281
4			AG 250				AG 250

d. PLOs assessed and courses used.

1. *Use basic business principles to manage projects or design a horticultural business enterprise.*

AG 230: Business Plan Assignment (Spring 2010)

2. *Recommend cultural practices, solve problems, plan projects, and cultivate horticultural crops in a sustainable manner based on sound biological and technological principles.*

AG 200:Gardens, Poinsettia production (Fall 2010)

AG 235: Irrigation Plan (*not until Fall 2011*)

AG 251: Market Garden, Garden Plan Spring (Spring 2010, Spring 2011)

3. *Explain the relationships between agroecosystems, economics, human culture, and natural environments.*

AG 174:IPM recommendations (Fall 2010)

AG 281: Weed Control recommendations (Spring 2011)

4. *Design gardens that demonstrate aesthetic principles.*

AG 250:Landscape Design Plan (*was not taught on proposed schedule in Spring 2011- offered in Spring 2012)*

2. Evidence

a. Methods and Evidence

In Spring 2010 the PLO "*Use basic business principles to manage projects or design a horticultural business enterprise."* was assessed within AG 230 Agriculture Business Management using the student learning outcome of creating a business plan. Students create a business plan to design a start-up business or manage an existing business.

Program Assessment Rubric for AG 230 Spring 2010				
PLO: Use basic business principles to manage projects or design a horticultural business enterprise.				
	Exceeds	**Meets**	**Needs Improvement**	**No Proficiency**
Create a Business Plan	39%	33%	16%	11%
Average SLO Score for the Course	39%	33%	16%	11%

In Spring 2010 and Spring 2011 the PLO "*Recommend cultural practices, solve problems, plan projects, and cultivate horticultural crops in a sustainable manner based on sound biological and technological principles."*was assessed within the AG 251 Sustainable Crop Production course. Students work within the market garden operation and their garden plan project assignment was assessed. The garden plan assignment asked students to design and plan a market garden for a Community Supported Agriculture (CSA - subscription boxes) for two summer months. The students were given 3 crops and allowed to choose three and had to determine planting times, amounts to plant, garden layout as well as determine certain cultural practices in order to service an 8 week CSA.

Program Assessment Rubric for AG 251 Spring 2010 and Spring 2011								
PLO: Recommend cultural practices, solve problems, plan projects, and cultivate horticultural crops in a sustainable manner based on sound biological and technological principles.	2010	2011	2010	2011	2010	2011	2010	2011
SLO: Demonstrate knowledge of horticultural principles in the cultivation of plants.	**Exceeds**		**Meets**		**Needs Improvement**		**No Proficiency**	
CSA Garden Plan Assignment	82%	67%	0%	8%	5%	8%	12%	17%

This same PLO was assessed in the Fall 2010 in AG 200 Introduction to Horticulture. Students were assessed on their performance at growing their poinsettias, square foot gardens and an embedded test question.

UHMC Market Garden	76%	75%	18%	17%	0%	8%	5%	0%
Average SLO Score for the Course	79%	71%	9%	13%	2.5%	8%	8.5%	9%

Program Assessment Rubric for AG 200 FALL 2010

PLO: Recommend cultural practices, solve problems, plan projects, and cultivate horticultural crops in a sustainable manner based on sound biological and technological principles.

SLO: Produce crops in a sustainable manner.	**Exceeds**	**Meets**	**Needs Improvement**	**No Proficiency**
Square foot garden	50%	33%	13%	4%
Poinsettia production	58%	25%	13%	4%
Test question	63%	N/A	17%	21%
Average SLO Score for the Course	57%	29%	14%	10%

In Fall 2010 the PLO "*Explain the relationships between agroecosystems, economics, human culture, and natural environments.*" was evaluated in AG 174 Insects and Their Control. Pest identification and insect identification in an exam and a final insect question was evaluated. Portions of the final exam that dealt with integrated pest management and cultural controls were evaluated.

PLO: Explain the relationships between agroecosystems, economics, human culture, and natural environments

SLO: Student can identify common insect pests	**Exceeds**	**Meets**	**Needs Improvement**
Final Exam results of Pest Identification	63%	13%	25%
Student Insect Collection	63%	13%	25%
SLO: Recommend non-chemical and chemical controls of insect pests.			
Final Exam: Student can identify 2/3 important parts of all IPM program.	56%	38%	6%

Final Exam: Student can identify 3/4 different cultural control measures used in Hawaii.	81%	6%	13%
Average SLO Score for the Course	66%	18%	17%

PLO #4, "*Design gardens that demonstrate aesthetic principles."* was not assessed. Ag 250 was low enrolled so was not taught in Spring 2011 as planned.

3. Results of student learning

PLO #1 Business Principles: The results of the assessment of the business plan shows that 72% of the students met or exceeded the Program Learning Outcome. It also shows that 16% needed to improve. These students (3 total), did well on the written portion of the plan such as executive summary, vision statements and business description but did not complete the financial portions of the business plan (cash flow, income statement, balance sheet). The students who had no proficiency (2 total) did not turn in the assignment.

This assessment has illustrated that students struggle with the numeric portion of this assignment. They have difficulty finding the necessary information, making estimates based on available information and difficulty in analyzing the budgets that they developed. They do develop an understanding of how to examine the parts of a business and compile a plan for a business that an outsider could use.

PLO #2 Crop Production: Combined data from both years in AG 251 and AG 200 assessment shows that 86% of the students meet or exceed the required outcomes for this PLO. The majority of students developed proficiency in planting, growing, harvesting and packing vegetable crops and/or growing a garden and a commercial poinsettia crop. Students who needed development generally had high rates of absenteeism so did not develop well with these hands-on tasks. Students who had no proficiency were students who dropped out at some point in the semester.

Students who were proficient in the market garden in AG 251 were very able to take what they learned in the market garden and apply that to create a garden plan that would produce a given amount and variety of product for 8 weeks. Students did not turn in the CSA garden assignment or made little effort did very poorly or had no proficiency. One student in 2011 had family difficulties that caused him to not finish this assignment. Two others provided incomplete plans. In 2011 the complete plans however did seem to be of higher quality as the instructor could provide more guidance the second time around.

Students learn well with hands on training. The final written CSA assignment in AG 250 is an excellent method to give students an opportunity to examine what they have learned, analyze the information and then synthesize this into their own plan and communicate that plan.

In AG 200, the quality of the market garden or quality of their assigned poinsettia variety does not affect the students' final class grade. However assessing how successful they are in producing these crops provides an opportunity to show integration of the classroom academic knowledge with hands on application. The embedded test question allows the instructor to see if the class integrated the importance of genetics, plant origin and the preservation of germplasm to the sustainability of crop production.

Sixty three percent got the question correct and 5 students (17%) did not take the final exam. As the answer was "all of the above" the other students were not wrong but they need improvement seeing the whole picture.

PLO#3, 84% of the students met the goal of identification and recommending sound control practices. Students have been successful demonstrating the principles of integrated pest management which exemplifies this PLO.

4. Planned Changes

a. Curriculum changes are in progress to modify and improve the Sustainable Tropical Crop certificates and degrees. During this process, attention has been focused on relevant competencies that link to course SLOs and degree PLOs. Certain content such as covering rules and regulations have been broken out of production courses so that the focus in the latter can be on application and hands-on reinforcement. Using technology to deliver content and assessment is also being explored.

b. The assessments influence our future planning as we try to modify one degree to support entrepreneurship. Assessing how students do in business planning, planning a market garden and field work skills helps us see where any potential instructional

weaknesses are so we can adjust to correct those weaknesses. It will also allow us to evaluate delivery systems to find a beneficial mix of hands-on, direct lecture, project based and on-line instruction. Developing meaningful, realistic and consistent assessment tools and schedules will continue to be a challenge as we proceed. As we are only two years into using this kind of assessment to evaluate the program, we still have much to learn and improve.

Part IV: Resource Implications

Additional Resources: The Agriculture and Natural Resources program has been fortunate to be able to create revenue streams to support the program. The program has large supply needs to support the classroom, greenhouse, and field labs. The program has generated almost all of the supply money needed via plant and vegetable sales. Supplies purchased via program generated revenue includes not just expendable supplies such as pots, seed, and potting mix, but computers for faculty, books, videos, instruments and tools.

In addition the program has been able to successfully apply for grants. Perkins grants have allowed the program to purchase substantial equipment including hand tools, tractor attachments and a walk behind tractor and implements. A USDA grant supported the development of an interdisciplinary ATS degree in Cultural and Natural Resource Management. This grant has also supplied money for student help in the form of stipends and provided pay for students to have internships. A support person to assist with recruitment and student tracking has also been funded and will be filled soon. This grant has provided funds in AY10-11 and AY11-12 to support lecturers to teach various agriculture courses. This has allowed us to expand course offerings and bring more students into the program. A Rural Development Grant that began in Summer 2011 will be supporting large equipment and supply purchases for a New Farmer Institute initiative. This grant will also be supporting a ½ time support person to develop internships and networks for students in the Sustainable Tropical Crop production degree program. A current Perkins grant has provided funds for lecturer fill behind to develop and improve curriculum for the Sustainable Crop Production degree program and entrepreneurship program.

To sustain these improvements and modifications in the program, it is hoped that another permanent faculty member could be hired in the future so that production classes, which require high contact hours, along with other specialty and regular courses can be offered on a regular basis allowing students to complete certificates and degrees in a timely manner.

Program Student Learning Outcomes

1. Program Learning Outcomes:

a. The Program Learning Outcomes for the Associate in Applied Science in Sustainable Tropical Crop Management are as follows:

Knowledge	*Use basic business principles to manage projects or design a horticultural business enterprise.*
Skill	*Recommend cultural practices, solve problems, plan projects, and cultivate horticultural crops in a sustainable manner based on sound biological and technological principles.*
Value	*Explain the relationships between agroecosystems, economics, human culture, and natural environments.*

The Program Learning Outcomes for the Associate in Applied Science in Horticulture and Landscape Maintenance are the same as above including the additional PLO:

Value	*Design gardens that demonstrate aesthetic principles*

b. Program Map

Assessment of Intended Program Learning Outcomes													
Courses in Program	AG 122	AG 174	AG 200	AG 201	AG 230	AG 235	AG 250	AG 251	AG 260	AG 269	AG 281	AG 264	AG 266
1. *Use basic business principles to manage projects or design a horticultural business enterprise.*	1	1	2	1	3	1	1	2	1	0	1	1	1
2. *Recommend cultural practices, solve problems, plan projects, and cultivate horticultural crops in a sustainable manner based on sound biological and technological principles.*	2	2	3	2	0	2	2	3	2	0	2	1	2

3. *Explain the relationships between agroecosystems, economics, human culture, and natural environments.*	2	2	2	2	1	2	1	1	1	1	3	1	1	
(Landscape and Horticulture only)														
4. *Design gardens that demonstrate aesthetic principles.*	0	0	0	0	0	1	3	0	1	1	1	0	0	
CODE	3 = A focus of course			2 = Evaluate Using Outcome			1 = Not evaluated			0 = Not included				