** Urban Agroecology Occupations**

**Labor Market Information Report**

**Merritt College**

Prepared by the San Francisco Bay Center of Excellence

for Labor Market Research

June 2019

# Recommendation

Based on all available data, there appears to be an undersupply of Urban Agroecology workers compared to the demand for this cluster of occupations in the Bay region and in the East Bay sub-region (Alameda and Contra Costa Counties.) There is a projected annual gap of about 10,647 students in the Bay region and 152 students in the East Bay Sub-Region.

This report also provides student outcomes data on employment and earnings for programs on TOP 0199.00 - Other Agriculture and Natural Resources in the state and region. It is recommended that these data be reviewed to better understand how outcomes for students taking courses on this TOP code compare to potentially similar programs at colleges in the state and region, as well as to outcomes across all CTE programs at Merritt College and in the region.

# Introduction

This report profiles Urban Agroecology Occupations in the 12 county Bay region and in the East Bay sub-region for a proposed new program at Merritt College. Although five occupations were listed by Merritt College for this proposed new certificate program, one of the occupations require a Bachelor’s degree. Students completing the certificate will be prepared for entry-level employment, but not for positions that require a Bachelor’s degree. Therefore, for the supply and demand “gap analysis” only the four occupations that require less than a Bachelor’s degree or that require a Bachelor’s degree but a third or more of those employed in the occupation have an Associate degree or some college coursework, were included in the Urban Agroecology occupational cluster, when estimating the labor market demand. However, for informational purposes all five occupations are used when presenting data in Tables 1,2,3,4,6,9,10, and 11 of this report.

|  |
| --- |
| * **Farmworkers and Laborers, Crop, Nursery, and Greenhouse (SOC 45-2092)**: Manually plant, cultivate, and harvest vegetables, fruits, nuts, horticultural specialties, and field crops. Use hand tools, such as shovels, trowels, hoes, tampers, pruning hooks, shears, and knives. Duties may include tilling soil and applying fertilizers; transplanting, weeding, thinning, or pruning crops; applying pesticides; or cleaning, grading, sorting, packing, and loading harvested products. May construct trellises, repair fences and farm buildings, or participate in irrigation activities. Excludes “Graders and Sorters, Agricultural Products" (45-2041) and “Forest, Conservation, and Logging Workers" (45-4011 through 45-4029).
 |
| Entry-Level Educational Requirement: No formal *educational credential* |
| Training Requirement: Short-term *on-the-job training* |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 12% |
| * **Food Scientists and Technologists (SOC 19-1012):** Use chemistry, microbiology, engineering, and other sciences to study the principles underlying the processing and deterioration of foods; analyze food content to determine levels of vitamins, fat, sugar, and protein; discover new food sources; research ways to make processed foods safe, palatable, and healthful; and apply food science knowledge to determine best ways to process, package, preserve, store, and distribute food.
 |
| Entry-Level Educational Requirement: Bachelor's *degree* |
| Training Requirement: None |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 0*%* |
| * **Farmers, Ranchers, and Other** **Agricultural Managers (SOC 11-9013):** Plan, direct, or coordinate the management or operation of farms, ranches, greenhouses, aquacultural operations, nurseries, timber tracts, or other agricultural establishments. May hire, train, and supervise farm workers or contract for services to carry out the day-to-day activities of the managed operation. May engage in or supervise planting, cultivating, harvesting, and financial and marketing activities. Excludes “First-Line Supervisors of Farming, Fishing, and Forestry Workers” (45-1011).
 |
| Entry-Level Educational Requirement: High *school diploma or equivalent* |
| Training Requirement: None |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 29*%* |
| * **Agricultural and Food Science Technicians** **(SOC 19-4011):** Work with agricultural and food scientists in food, fiber, and animal research, production, and processing; and assist with animal breeding and nutrition. Conduct tests and experiments to improve yield and quality of crops or to increase the resistance of plants and animals to disease or insects. Includes technicians who assist food scientists or technologists in the research and development of production technology, quality control, packaging, processing, and use of foods.
 |
| Entry-Level Educational Requirement: Associate's *degree* |
| Training Requirement: Moderate-term *on-the-job training* |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 38*%* |
| * **First-Line Supervisors of Farming**, **Fishing, and Forestry Workers (SOC 45-1011):** Directly supervise and coordinate the activities of agricultural, forestry, aquacultural, and related workers. Excludes “First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers" (37-1012).
 |
| Entry-Level Educational Requirement: High *school diploma or equivalent* |
| Training Requirement: None |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 23*%* |

# Occupational Demand

**Table 1. Employment Outlook for Urban Agroecology Occupations in Bay Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation  | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 10% Hourly Wage | Median Hourly Wage |
| Farmworkers and Laborers, Crop, Nursery, and Greenhouse | 56,325 | 60,130 | 3,804  | 7% | 48,323 | 9,665 | $10.51  | $12.23  |
| Food Scientists and Technologists | 1,268 | 1,324 | 56  | 4% | 729 | 146 | $20.62  | $35.48  |
| Farmers, Ranchers, and Other Agricultural Managers | 7,756 | 7,716 | (40) |  (1%) | 3,043 | 609 | $9.14  | $12.86  |
| Agricultural and Food Science Technicians | 1,517 | 1,563 | 46  | 3% | 847 | 169 | $15.57  | $22.98  |
| First-Line Supervisors of Farming, Fishing, and Forestry Workers | 2,731 | 2,923 | 192  | 7% | 2,067 | 413 | $14.06  | $22.35  |
| **Total** | **69,597** | **73,655** | **4,058**  | **6%** | **55,009** | **11,002** | **$10.80**  | **$13.35**  |

*Source: EMSI 2019.2*

**Bay Region** includes Alameda, Contra Costa, Marin, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano and Sonoma Counties

**Table 2. Employment Outlook for Urban Agroecology Occupations in East Bay Sub-Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation  | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 10% Hourly Wage | Median Hourly Wage |
| Farmworkers and Laborers, Crop, Nursery, and Greenhouse | 720 | 705 | (15) |  (2%) | 672 | 110 | $10.54  | $12.23  |
| Food Scientists and Technologists | 185 | 196 | 11  | 6% | 106 | 22 | $14.93  | $40.60  |
| Farmers, Ranchers, and Other Agricultural Managers | 308 | 282 | (27) |  (9%) | 84 | 22 | $9.62  | $13.74  |
| Agricultural and Food Science Technicians | 178 | 188 | 10  | 6% | 103 | 21 | $13.23  | $20.12  |
| First-Line Supervisors of Farming, Fishing, and Forestry Workers | 65 | 64 | (0) |  (1%) | 43 | 9 | $17.01  | $20.54  |
| **TOTAL** | **1,457** | **1,435** | **(22)** |  **(1%)** | **1,008** | **184** | **$11.52**  | **$17.49**  |

*Source: EMSI 2019.2*

**East Bay Sub-Region** includes Alameda and Contra Costa Counties

### Job Postings in Bay Region and East Bay Sub-Region

**Table 3. Number of Job Postings by Occupation for latest 12 months (May 2018 - April 2019)**

| Occupation | Bay Region | East Bay |
| --- | --- | --- |
|  Farmworkers and Laborers, Crop | 129 | 35 |
|  Food Science Technicians | 114 | 34 |
|  Food Scientists and Technologists | 89 | 31 |
|  Agricultural Technicians | 44 | 10 |
|  First-Line Supervisors of Agricultural Crop and Horticultural Workers | 30 | 9 |
|  Nursery and Greenhouse Managers | 24 | 6 |
|  **Total** | **430** | **125** |

*Source: Burning Glass*

**Table 4a. Top Job Titles for Urban Agroecology Occupations for latest 12 months (May 2018 - April 2019)**

**Bay Region**

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | Bay | Common Title | Bay |
| Technician | 57 | Director of Nursing | 6 |
| Enologist | 20 | Agricultural Technician | 6 |
| Food Safety Auditor | 15 | Territory Food Safety Auditor, Information And Technology Industry | 5 |
| Food Technologist | 13 | Farmworker | 5 |
| Field Worker | 13 | Assistant Horticulturist | 5 |
| Picker | 12 | Sensory Technician | 4 |
| Product Development Scientist | 10 | Self-Marketing | 4 |
| Horticulturist | 10 | Receiver | 4 |
| Grower | 10 | Laborer, Agriculture Industry | 4 |
| Quality Technician | 9 | Horticulturist, C++ | 4 |
| Shelter Monitor | 6 | Head | 4 |
| R Developer | 6 | Food Scientist | 4 |
| Irrigator | 6 | Farm Worker | 4 |
| Eyelash Extension Technician | 6 | Control Aide | 4 |

**Table 4b. Top Job Titles for Urban Agroecology Occupations for latest 12 months (May 2018 - April 2019)**

**East Bay Sub-Region**

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | East Bay | Common Title | East Bay |
| Technician | 18 | Operator, Casual | 2 |
| Food Technologist | 12 | Junior Specialist, Laboratory | 2 |
| Product Development Scientist | 5 | Grower | 2 |
| Picker | 5 | Food Labeling Specialist | 2 |
| Laborer, Agriculture Industry | 4 | Clinical Quality Assurance Contractor | 2 |
| Horticulturist, C++ | 4 | Agricultural Aide | 2 |
| Horticulturist | 4 | Wireless Tester | 1 |
| Food Safety Auditor | 4 | Test\* Only - Do Not | 1 |
| Product Development Engineer | 3 | Test Rr Standard Requisition Do Not 1 | 1 |
| Greenhouse Gas Verifier | 3 | Technologist | 1 |
| Shelter Monitor | 2 | Tangelo Harvest In | 1 |
| Relief Shelter Monitor For Homeless Shelter In | 2 | Assistant At Harvest Park External Sna | 1 |
| Receiver | 2 | Sous Chef | 1 |
| Program Technician/Intern | 2 | Sensory Technologist | 1 |

*Source: Burning Glass*

# Industry Concentration

**Table 5. Industries Hiring Urban Agroecology Workers in Bay Region**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Industry – 6 Digit NAICS (No. American Industry Classification) Codes | Jobs in Industry (2018) | Jobs in Industry (2022) | % Change (2018-22) | % in Industry (2018) |
| Crop Production (111000) | 23,161 | 22,214 |  (4.1%) | 33.8% |
| Farm Labor Contractors and Crew Leaders (115115) | 20,876 | 22,237 | 6.5% | 30.5% |
| Postharvest Crop Activities (except Cotton Ginning) (115114) | 10,150 | 12,267 | 20.9% | 14.8% |
| Farm Management Services (115116) | 2,213 | 2,146 |  (3.0%) | 3.2% |
| Crop Harvesting, Primarily by Machine (115113) | 1,856 | 1,923 | 3.6% | 2.7% |
| Animal Production (112000) | 1,410 | 1,319 |  (6.5%) | 2.1% |
| Wineries (312130) | 1,377 | 1,405 | 2.0% | 2.0% |
| Soil Preparation, Planting, and Cultivating (115112) | 1,321 | 1,442 | 9.2% | 1.9% |

*Source: EMSI 2019.2*

**Table 6. Top Employers Posting Urban Agroecology Occupations in Bay Region and East Bay Sub-Region (May 2018 - April 2019)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Employer | Bay | Employer | Bay | Employer | East Bay |
| Hupp Draft Services Inc | 44 | Filoli Historic House And Garden | 4 | Hupp Draft Services Inc | 17 |
| Trinchero Family Estates | 9 | Deloitte | 4 | University Of California Berkeley | 6 |
| University Of California Berkeley | 7 | Chandon Incorporated | 4 | University California | 6 |
| University California | 7 | California Department Of Food And Agriculture | 4 | Schnitzer Steel Industries | 5 |
| Schnitzer Steel Industries | 7 | Afc Franchise Corp | 4 | Clorox Company | 5 |
| Constellation Brands Incorporated | 6 | State of California | 3 | University Of California Office Of The President | 4 |
| Underwriters Laboratories Incorporated | 5 | White Wave Foods | 3 | Methodology | 4 |
| Premium Packing | 5 | Treasury Wine Estates | 3 | Abode Services | 4 |
| Clorox Company | 5 | San Mateo County Mosquito And Vector Control District | 3 | Safeway Incorporated | 3 |
| Abode Services | 5 | Safeway Incorporated | 3 | Rincon Consultants Incorporated | 3 |
| University Of California Office Of The President | 4 | Rincon Consultants Incorporated | 3 | Albertsons | 3 |
| Ul LLC | 4 | Paradise Valley Produce | 3 | Afc Franchise Corp | 3 |
| Methodology | 4 | Nor Cal Beverage Company Incorporated | 3 | Tesla | 2 |
| Magic Gardens Landscaping | 4 | Munchery | 3 | Rich Products Corporation | 2 |
| Jackson Family Wines | 4 | Impossible Foods | 3 | Phoenix Resource Group | 2 |
| Front Range Biosciences | 4 | Eurofins Scientific | 3 | Lawrence Livermore National Laboratory | 2 |
| Flying Food Group LLC | 4 | Driscolls, Inc | 3 | Kaiser Permanente | 2 |

*Source: Burning Glass*

# Educational Supply

There is one community college in the Bay Region issuing 10 awards on average annually (last 3 years) on TOP 0199.00 - Other Agriculture and Natural Resources. There are no colleges in the in the East Bay Sub-Region issuing awards on the TOP code.

**Table 7a. Awards on TOP 0199.00 - Other Agriculture and Natural Resources in the Bay Region**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| College | Sub-Region | Associates | Certificates | Noncredit | Total |
| **Santa Rosa** | North Bay | 7 | 3 | 0 | 10 |

# *Source: IPEDS, Data Mart and Launchboard*

NOTE: Headcount of students who took one or more courses is for 2016-17. The annual average for awards is 2014-17 unless there are only awards in 2016-17. The annual average for other postsecondary is for 2013-16.

There are four community colleges in the Bay Region issuing 199 awards on average annually (last 3 years) on Viticulture and Enology – CIP 1.0309 and Food Technology and Processing – CIP 1.1002. There is one college in the East Bay sub-region issuing 10 awards on average annually (last 3 years) on these two CIP codes.

**Table 7b. Awards on Viticulture and Enology – CIP 1.0309 and Food Technology and Processing – CIP 1.1002 in the Bay Region**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **College** | **Sub-Region** | **CIP** | **Associates** | **Certificates** | **Noncredit** | **Total** |
| Hartnell College | Santa Cruz & Monterey | 1.1002 | 0 | 50 | 0 | 50 |
| Las Positas College | East Bay | 1.0309 | 10 | 0 | 0 | 10 |
| Napa Valley College | North Bay | 1.0309 | 47 | 22 | 0 | 69 |
| Santa Rosa Junior College | North Bay | 1.0309 | 51 | 19 | 0 | 70 |
| **Total Bay Region** |  |  | **108** | **91** | **0** | **199** |
| **East Bay Sub-Region** |  |  | **10** | **0** | **0** | **10** |

*Source: 2015, 2016, 2017 EMSI 2019 Q2*

# Gap Analysis

Based on the data included in this report, there is a large labor market gap in the Bay region with 10,856 annual openings for the Urban Agroecology occupational cluster and a total of 209 annual (3-year average) awards (from TOP 0199.00, CIP 1.0309 and CIP 1.1002) for an annual undersupply of 10,647 students. In the East Bay Sub-Region, there is also a gap with 162 annual openings and 10 annual (3-year average) awards (from CIP 1.0309) for an annual undersupply of 152 students.

# Student Outcomes

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0199.00 - Other Agriculture and Natural Resources**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2015-16 | Bay (All CTE Programs) | Merritt College (All CTE Programs) | State (0199.00) | Bay (0199.00) | East Bay (0199.00) | Merritt College (0199.00) |
| % Employed Four Quarters After Exit | 74% | 71% | 71% | n/a | n/a | n/a |
| Median Quarterly Earnings Two Quarters After Exit | $10,550 | $9,306 | $10,082 | n/a | n/a | n/a |
| Median % Change in Earnings | 46% | 43% | 44% | n/a | n/a | n/a |
| % of Students Earning a Living Wage | 63% | 60% | 83% | n/a | n/a | n/a |

*Source: Launchboard Pipeline (version available on 5/21/19)*

# Skills, Certifications and Education

**Table 9. Top Skills for Urban Agroecology Occupations in Bay Region (May 2018 - April 2019)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Skill | Postings | Skill | Postings | Skill | Postings |
| Cleaning | 74 | Microbiology | 22 | Record Keeping | 16 |
| Food Safety | 71 | Lifting Ability | 21 | Food Industry Knowledge | 16 |
| Quality Assurance and Control | 55 | Fertilizers | 21 | Enology | 16 |
| Scheduling | 52 | Project Management | 20 | Machinery | 15 |
| Repair | 49 | Hazard Analysis Critical Control Point (HACCP) | 20 | Experiments | 14 |
| Food Science | 43 | Forklift Operation | 20 | Data Analysis | 13 |
| Product Development | 34 | Chemical Engineering | 20 | Product Sales | 12 |
| Customer Service | 33 | Biology | 19 | Hand Tools | 12 |
| Quality Management | 32 | Technical Support | 18 | Fermentation | 12 |
| Packaging | 31 | Data Collection | 18 | Database Software | 12 |
| Roofing | 28 | Statistics | 17 | Spreadsheets | 11 |
| Chemistry | 28 | Staff Management | 17 | New Product Development | 11 |
| Budgeting | 24 | Food Safety and Quality | 17 | Mechanical Knowledge | 11 |
| Irrigation Systems | 23 | Food Preparation | 17 | Good Manufacturing Practices (GMP) | 11 |
| Data Entry | 23 | Statistical Analysis | 16 | Description and Demonstration of Products | 11 |

*Source: Burning Glass*

**Table 10. Certifications for Urban Agroecology Occupations in the Bay Region (May 2018 - April 2019)**

Note: 68% of records have been excluded because they do not include a certification. As a result, the chart below may not be representative of the full sample.

|  |  |  |  |
| --- | --- | --- | --- |
| Certification | Postings | Certification | Postings |
| Driver's License | 116 | Project Management Professional (PMP) | 1 |
| Forklift Operator Certification | 8 | Master Gardener Certification | 1 |
| Pest Control Applicator | 7 | Licensed Master Social Worker (LMSW) | 1 |
| Registered Environmental Health Specialist | 5 | Licensed Independent Clinical Social Worker (LICSW) | 1 |
| Certified Professional - Food Safety | 4 | Laboratory Animal Technician | 1 |
| Security Clearance | 3 | IT Infrastructure Library (ITIL) Certification | 1 |
| ServSafe | 2 | First Aid CPR AED | 1 |
| Project Management Certification | 2 | Cosmetology License | 1 |
| Global Food Safety Initiative (GFSI) | 2 | Child Development Associate (CDA) | 1 |
| FSSC 22000 | 2 | Certified Scrum Product Owner (CSPO) | 1 |
| Certified Arborist | 2 | Certified Sanitarian | 1 |
| Social Work License | 1 | Certified Nursery Certificate | 1 |

*Source: Burning Glass*

**Table 11. Education Requirements for Urban Agroecology Occupations in Bay Region**

Note: 50% of records have been excluded because they do not include a degree level. As a result, the chart below may not be representative of the full sample.

|  |  |  |
| --- | --- | --- |
| Education (minimum advertised) | Latest 12 Mos. Postings | Percent 12 Mos. Postings |
| High school or vocational training | 94 | 42% |
| Associate Degree | 9 | 4% |
| Bachelor’s Degree or Higher | 105 | 54% |

*Source: Burning Glass*

# Methodology

Occupations for this report were identified by use of skills listed in O\*Net descriptions and job descriptions in Burning Glass. Labor demand data is sourced from Economic Modeling Specialists International (EMSI) occupation data and Burning Glass job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CTE Launchboard and CCCCO Data Mart.

# Sources

O\*Net Online

Labor Insight/Jobs (Burning Glass)

Economic Modeling Specialists International (EMSI)

CTE LaunchBoard [www.calpassplus.org/Launchboard/](http://www.calpassplus.org/Launchboard/)

Statewide CTE Outcomes Survey

Employment Development Department Unemployment Insurance Dataset

Living Insight Center for Community Economic Development

Chancellor’s Office MIS system

# Contacts

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