

Labor Market Analysis: 0115.20/Wildlife and Fisheries

Aquaculture Entry-Level (Certificate requiring 16 to fewer than 30 semester units)

Los Angeles Center of Excellence, September 2022

Summary

Program Endorsement:	Endorsed: All Criteria Met <input type="checkbox"/>	Endorsed: Some Criteria Met <input checked="" type="checkbox"/>	Not Endorsed <input type="checkbox"/>
Program Endorsement Criteria			
Supply Gap:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Living Wage: (Entry-Level, 25th)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Education:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Emerging Occupation(s)			
	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	

The Los Angeles Center of Excellence for Labor Market Research (LA COE) prepared this report to provide regional labor market supply and demand data related to three middle-skill occupations:

- **Agricultural Technicians (19-4012)** Work with agricultural scientists in plant, fiber, and animal research, or assist with animal breeding and nutrition. Set up or maintain laboratory equipment and collect samples from crops or animals. Prepare specimens or record data to assist scientists in biology or related life science experiments. Conduct tests and experiments to improve yield and quality of crops or to increase the resistance of plants and animals to disease or insects.¹
- **Food Science Technicians (19-4013)** Work with food scientists or technologists to perform standardized qualitative and quantitative tests to determine physical or chemical properties of food or beverage products. Includes technicians who assist in research and development of production technology, quality control, packaging, processing, and use of foods.²
- **Farmworkers, Farm, Ranch, and Aquacultural Animals (45-2093)** Attend to live farm, ranch, open range or aquacultural animals that may include cattle, sheep, swine, goats, horses and other equines, poultry, rabbits, finfish, shellfish, and bees. Attend to animals produced for animal products, such as meat, fur, skins, feathers, eggs, milk, and honey. Duties may include feeding, watering, herding, grazing, milking, castrating, branding, de-beaking, weighing, catching, and loading animals. May maintain records on animals; examine animals to detect diseases and injuries; assist in birth deliveries; and administer medications, vaccinations, or insecticides as appropriate. May clean and maintain animal housing areas. Includes workers who shear wool from sheep and collect eggs in hatcheries.³

¹ [Agricultural Technicians \(bls.gov\)](https://www.bls.gov/oes/current/oes194012.htm)

² [Food Science Technicians \(bls.gov\)](https://www.bls.gov/oes/current/oes194013.htm)

³ [Farmworkers, Farm, Ranch, and Aquacultural Animals \(bls.gov\)](https://www.bls.gov/oes/current/oes452093.htm)

Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree.⁴ This report is intended to help determine whether there is demand in the local labor market that is not being met by the supply from community college programs that align with the relevant occupations.

Based on the available data, there appears to be a supply gap for these occupations related to aquaculture in the region. While the majority of annual openings have entry-level wages that are lower than the self-sufficiency standard wage in both Los Angeles and Orange counties, the national-level educational attainment data indicates 36% of *agricultural technicians* and *food science technicians* in the field have completed some college or an associate degree. **Therefore, due to some of the criteria being met, the LA COE endorses this proposed program.** Detailed reasons include:

Demand:

- **Supply Gap Criteria** – Over the next five years, **266 jobs are projected to be available annually** in the region due to retirements and workers leaving the field, **which is more than the three-year average of 17 awards conferred** by educational institutions in the region.
 - The SOC codes in this report include various agricultural occupations, including roles related to aquaculture. Since there is not an occupation that solely represents aquaculture, **the number of annual job openings is likely overstated for jobs related to aquaculture.**
 - Over the past 12 months, there were **429 online job postings related to the occupations in this report.** The highest number of job postings were for agriculture technicians, harvest technicians, yard attendants, food safety technicians, and ranch hands.
 - However, **only 4 of these 429 job postings listed “aqua*” as a keyword in the advertisement.**
- **Living Wage Criteria** – Within Los Angeles County, the majority (77%) of annual job openings for the occupations in this report have **entry-level wages below the self-sufficiency standard hourly wage** (\$18.10/hour).⁵
- **Educational Criteria** – Within the greater LA/OC region, **66% of the annual job openings** for occupations related to aquaculture **typically require no formal educational credential.**

⁴ The COE classifies middle-skill jobs as the following:

- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor's degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

⁵ Self-Sufficiency Standard wage data was pulled from The Self-Sufficiency Standard Tool for California. For more information, visit: <http://selfsufficiencystandard.org/california>.

- The national-level educational attainment data indicates **36% of agricultural technicians and food science technicians in the field have completed some college or an associate degree.**
- However, **only 15% of farmworkers, farm, ranch, and aquacultural animals have completed some college or an associate degree,** while 78% of current workers in the field have completed a high school diploma or less education.

Supply:

- There are **2 community colleges** in the greater LA/OC region that issue awards related to aquaculture, conferring an average of **17 awards annually** between 2018 and 2021.
- Currently, there are no non-community colleges in the region that offer programs that train for the occupations of interest.

Occupational Demand

Exhibit 1 shows the five-year occupational demand projections for these entry-level aquaculture occupations. In the greater Los Angeles/Orange County region, the number of jobs related to these occupations is projected to decrease by 4% through 2026. However, there will be nearly 270 job openings per year through 2026 due to retirements and workers leaving the field. It is important to note that the SOC codes in this report include various agricultural occupations and not solely work roles related to aquaculture. Therefore, the data in Exhibit 1 is likely overstated for entry-level aquaculture jobs.

Exhibit 1: Occupational demand in Los Angeles and Orange counties⁶

Geography	2021 Jobs	2026 Jobs	2021-2026 Change	2021-2026 % Change	Annual Openings
Los Angeles	1,377	1,354	(23)	(2%)	198
Orange	490	434	(56)	(11%)	67
Total	1,867	1,789	(79)	(4%)	266

Wages

The labor market endorsement in this report considers the entry-level hourly wages for these occupations related to aquaculture in Los Angeles County as they relate to the county’s self-sufficiency standard wage. Orange County wages are included below in order to provide a complete analysis of the greater LA/OC region. Detailed wage information, by county, is included in Appendix A.

Los Angeles County—The majority (77%) of annual openings for the occupations in this report have entry-level wages below the self-sufficiency standard wage for one adult (\$18.10 in Los Angeles County). Typical entry-level hourly wages are in a range between \$14.02 and \$18.22. One occupation in this report has entry-level wages above the county’s self-sufficiency standard

⁶ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

wage: *food science technicians* (\$18.22). Experienced workers can expect to earn wages between \$18.09 and \$28.98, which are nearly equal to or higher than the self-sufficiency standard.

Exhibit 2: Hourly Earnings for Occupations in LA County

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Agricultural Technicians (19-4012)	\$16.31	\$19.63	\$27.36
Food Science Technicians (19-4013)	\$18.22	\$22.51	\$28.98
Farmworkers, Farm, Ranch, and Aquacultural Animals (45-2093)	\$14.02	\$14.65	\$18.09

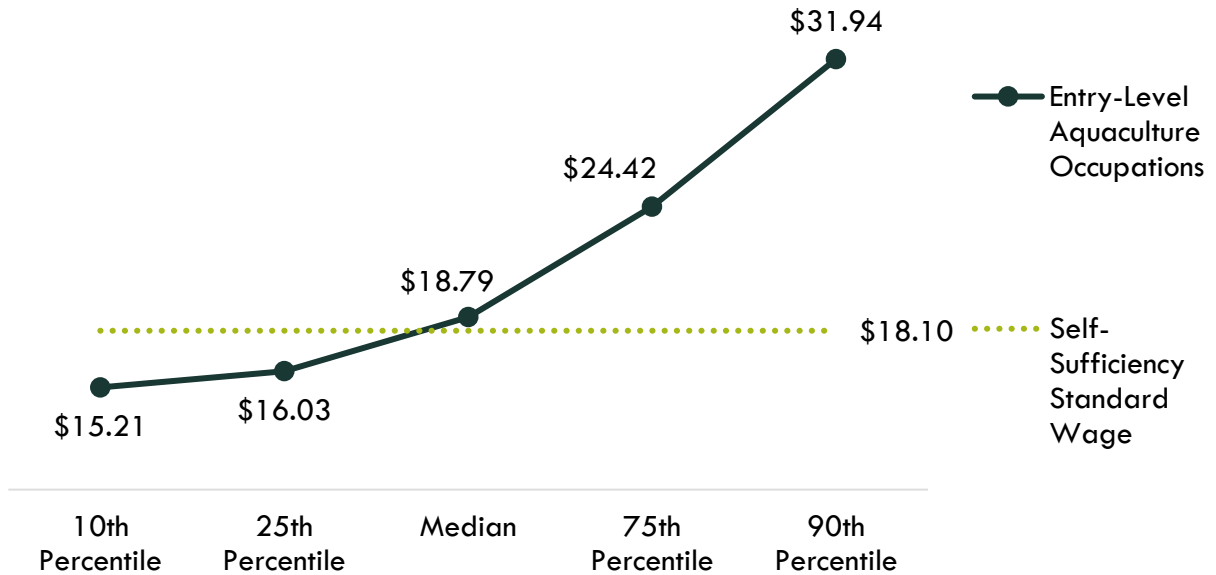
Orange County—All three occupations have entry-level wages **below** the self-sufficiency standard wage for one adult (\$20.63 in Orange County). Typical entry-level hourly wages are in a range between \$14.03 and \$17.71. Experienced *agricultural technicians* and *food science technicians* can expect to earn wages between \$25.83 and \$28.18, which are higher than the self-sufficiency standard. However, experienced *farmworkers, farm, ranch, and aquacultural animals* earn less than the self-sufficiency standard wage (\$16.94).

Exhibit 3: Hourly Earnings for Occupations in Orange County

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Agricultural Technicians (19-4012)	\$15.57	\$18.66	\$25.83
Food Science Technicians (19-4013)	\$17.71	\$21.89	\$28.18
Farmworkers, Farm, Ranch, and Aquacultural Animals (45-2093)	\$14.03	\$14.64	\$16.94

On average, the entry-level earnings for the occupations in this report are \$16.03; this is below the living wage for one single adult in Los Angeles County (\$18.10). The median wage for these occupations is \$18.79, which is more than the self-sufficiency standard wage in LA County but less than Orange County. Exhibit 4 shows the average wage for the occupations in this report, from entry-level to experienced workers.

Exhibit 4: Average Hourly Earnings for Entry-Level Aquaculture Occupations in LA/OC

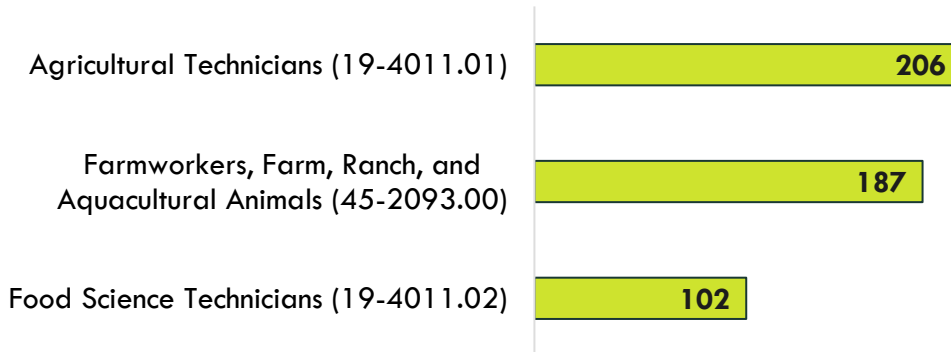


Job Postings

There were 429 online job postings related to the occupations in this report listed in the past 12 months. Exhibit 5 displays the number of job postings by occupation. The majority of job postings (44%) were for *agricultural technicians*, followed by *farmworkers, farm, ranch, and aquacultural animals* (37%) and *food science technicians* (19%). The highest number of job postings were for agriculture technicians, harvest technicians, yard attendants, food safety technicians, and ranch hands. The top skills were quality assurance and control, customer service, food safety, lifting ability, and repair. The top three employers, by number of job postings, in the region were Malibu Gold, Hawx Services, and Placentia Yorba Linda Unified School District.

Of these 429 job postings, only four mentioned the keyword “aqua*” in the advertisement. Two of these postings were for student greenhouse technicians – urban agriculture, one was for a pond technician, and one was for an aquatic attendant.

Exhibit 5: Job postings by occupation (last 12 months)



Educational Attainment

The Bureau of Labor Statistics (BLS) lists the following typical entry-level education levels for the occupations in this report:

- **Associate degree:** *Agricultural technicians; food science technicians*
- **No formal educational credential:** *farmworkers, farm, ranch, and aquacultural animals*

In the greater LA/OC region, the majority of annual job openings (66%) typically require no formal educational credential. The national-level educational attainment data indicates 36% of *agricultural technicians* and *food science technicians* in the field have completed some college or an associate degree. However, only 15% of *farmworkers, farm, ranch, and aquacultural animals* have completed some college or an associate degree, while 78% of current workers in the field have completed a high school diploma or less education. Of the 56% of related job postings listing a minimum education requirement in the greater Los Angeles/Orange County region, 98% (289) requested high school or vocational training, and 2% (6) requested an associate degree.

Educational Supply

Community College Supply—Exhibit 6 shows the annual and three-year average number of awards conferred by community colleges in the related TOP code: Natural Resources (0115.00). The only two colleges with completions in the region are West LA and Saddleback. There are three other related TOP codes that train students for the occupations in this report, but have no current programs in the region or have not conferred awards in the past three years: Food Processing and Related Technologies (0113.00), Wildlife and Fisheries (0115.20), and Ocean Technology (1920.00). Currently, there are no non-community college institutions in the greater LA/OC region that have conferred awards for programs that train for entry-level aquaculture occupations in the past three years.

Exhibit 6: Regional community college awards (certificates and degrees), 2018-2021

TOP	Program	College	2018-19 Awards	2019-20 Awards	2020-21 Awards	3-Year Average
0115.00	Natural Resources	West LA	-	37	-	12
		LA Subtotal	-	37	-	12
		Saddleback	3	4	6	4
		OC Subtotal	3	4	6	4
Supply Total/Average			3	41	6	17

Appendix A: Occupational demand and wage data by county

Exhibit 7. Los Angeles County

Occupation (SOC)	2021 Jobs	2026 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Agricultural Technicians (19-4012)	180	180	(0)	(0%)	23	\$16.31	\$19.63	\$27.36
Food Science Technicians (19-4013)	364	348	(16)	(4%)	45	\$18.22	\$22.51	\$28.98
Farmworkers, Farm, Ranch, and Aquacultural Animals (45-2093)	834	827	(7)	(1%)	130	\$14.02	\$14.65	\$18.09
Total	1,377	1,354	(23)	(2%)	198	-	-	-

Exhibit 8. Orange County

Occupation (SOC)	2021 Jobs	2026 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Agricultural Technicians (19-4012)	73	74	1	1%	10	\$15.57	\$18.66	\$25.83
Food Science Technicians (19-4013)	112	112	(0)	(0%)	14	\$17.71	\$21.89	\$28.18
Farmworkers, Farm, Ranch, and Aquacultural Animals (45-2093)	305	249	(56)	(18%)	44	\$14.03	\$14.64	\$16.94
Total	490	434	(56)	(11%)	67	-	-	-

Exhibit 9. Los Angeles and Orange Counties

Occupation (SOC)	2021 Jobs	2026 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Typical Entry-Level Education
Agricultural Technicians (19-4012)	253	253	1	0%	32	Associate degree
Food Science Technicians (19-4013)	476	459	(17)	(3%)	59	Associate degree
Farmworkers, Farm, Ranch, and Aquacultural Animals (45-2093)	1,138	1,076	(62)	(5%)	174	No formal educational credential
Total	1,867	1,789	(79)	(4%)	266	-

Appendix B: Sources

- O*NET Online
- Labor Insight (Burning Glass Technologies)
- Lightcast (formerly Emsi)
- Bureau of Labor Statistics (BLS)
- California Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- Self-Sufficiency Standard at the Center for Women's Welfare, University of Washington
- Chancellor's Office Curriculum Inventory (COCI 2.0)

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