










# Horticulture Occupations

## Labor Market Analysis: San Diego County

May 2023

### Summary

NEW PROGRAM RECOMMENDATION?	EVIDENCE OF A SUPPLY GAP?	AT OR ABOVE THE LIVING WAGE?	EXPECTED EDUCATION FOR MAJORITY OF OCCUPATIONS ANALYZED
 <p><b>Proceed with New Program</b></p>	 	 	<ul style="list-style-type: none"> <li><input type="checkbox"/> Doctorate Degree</li> <li><input checked="" type="checkbox"/> Master's Degree</li> <li><input type="checkbox"/> Bachelor's Degree</li> <li><input type="checkbox"/> Associate Degree</li> <li><input type="checkbox"/> Some College or Certificate</li> <li><input type="checkbox"/> HS Diploma or Equivalent</li> <li><input type="checkbox"/> Less than a HS Diploma</li> <li><input type="checkbox"/> Apprenticeship</li> </ul>
SUPPORT FOR PROGRAM MODIFICATION?	NUMBER OF INSTITUTIONS THAT PROVIDE TRAINING	NUMBER OF ANNUAL JOB OPENINGS	
 	<p><b>MEDIUM</b></p> 	<p><b>HIGH</b></p> 	

This brief provides labor market information about *Horticulture Occupations* to assist the San Diego and Imperial Counties Community Colleges with program development and strategic planning. *Horticulture Occupations* include “Farmers, Ranchers, and Other Agricultural Managers,” “First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers,” “Landscape Architects,” and “Pesticide Handlers, Sprayers, and Applicators, Vegetation,” and “Soil and Plant Scientists.” According to available labor market information, *Horticulture Occupations* in San Diego County have a labor market demand of 505 annual job openings (while average demand for a single occupation in San Diego County is 289 annual job openings), and five institutions supply 105 awards for these occupations, suggesting that there is a supply gap in the labor market. On average, entry-level and median wages are above the living wage. This brief recommends that the colleges proceed with developing a new program and supports a program modification because 1) there is a supply gap in San Diego County; 2) these occupations’ entry-level and median earnings are above the living wage; and 3) there is a high number of annual job openings. Colleges should note that **employers typically require a master’s degree or higher as the minimum educational requirement for these occupations.**

## Introduction

This report provides labor market information in San Diego County for the following occupational codes in the Standard Occupational Classification (SOC)<sup>1</sup> system:

- **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.
- **First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers** (SOC 37-1012): Directly supervise and coordinate activities of workers engaged in landscaping or groundskeeping activities. Work may involve reviewing contracts to ascertain service, machine, and workforce requirements; answering inquiries from potential customers regarding methods, material, and price ranges; and preparing estimates according to labor, material, and machine costs.
- **Landscape Architects** (SOC 17-1012): Plan and design land areas for projects such as parks and other recreational facilities, airports, highways, hospitals, schools, land subdivisions, and commercial, industrial, and residential sites.
- **Pesticide Handlers, Sprayers, and Applicators, Vegetation** (SOC 37-3012): Mix or apply pesticides, herbicides, fungicides, or insecticides through sprays, dusts, vapors, soil incorporation, or chemical application on trees, shrubs, lawns, or crops. Usually requires specific training and state or federal certification.
- **Soil and Plant Scientists** (SOC 19-1013): Conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity.

For the purpose of this report, these occupations are referred to as *Horticulture Occupations*.

---

<sup>1</sup> The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. [bls.gov/soc](https://www.bls.gov/soc).

## Projected Occupational Demand

Between 2022 and 2027, *Horticulture Occupations* are projected to increase by 196 net jobs or four percent (Exhibit 1a). Employers in San Diego County will need to hire 505 workers annually to fill new jobs and backfill jobs due to attrition caused by turnover and retirement, for example.

**Exhibit 1a: Number of Jobs for Horticulture Occupations (2012-2027)<sup>2</sup>**

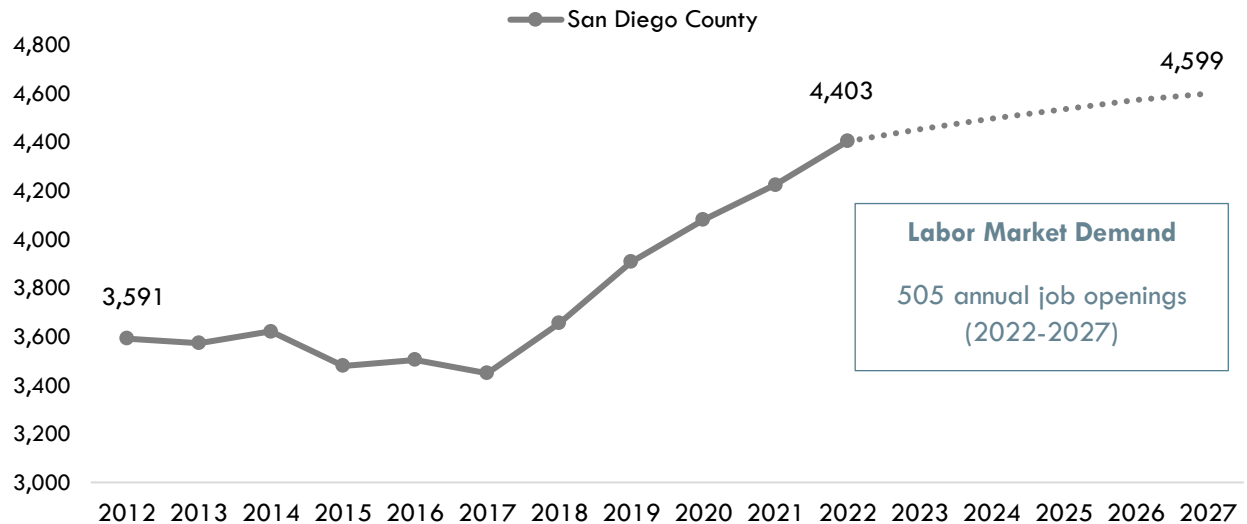


Exhibit 1b disaggregates the projected number of jobs change by occupation. “Farmers, Ranchers, and Other Agricultural Managers” are projected to have the most labor market demand between 2022 and 2027, with 278 annual job openings.

**Exhibit 1b: Number of Jobs for Horticulture Occupations in San Diego County (2022-2027)<sup>3</sup>**

Occupational Title	2022 Jobs	2027 Jobs	2022 - 2027 Net Jobs Change	2022-2027 % Net Jobs Change	Annual Job Openings (Demand)
Farmers, Ranchers, and Other Agricultural Managers	2,382	2,488	106	4%	278
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	1,198	1,230	32	3%	133
Landscape Architects	403	417	14	4%	35
Pesticide Handlers, Sprayers, and Applicators, Vegetation	225	233	8	4%	31
Soil and Plant Scientists	195	231	36	18%	28
<b>Total</b>	<b>4,403</b>	<b>4,599</b>	<b>196</b>	<b>4%</b>	<b>505</b>

<sup>2</sup> Lightcast 2023.01; QCEW, Non-QCEW, Self-Employed.

<sup>3</sup> Lightcast 2023.01; QCEW, Non-QCEW, Self-Employed.

## Earnings

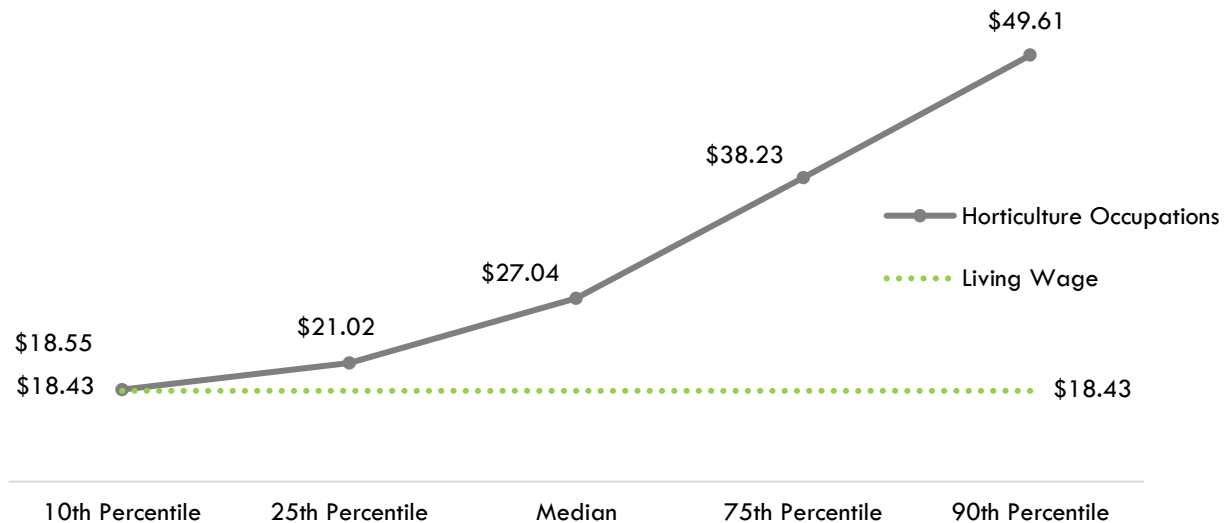
Exhibit 2a disaggregates hourly earnings by occupation. The entry-level hourly earnings for *Horticulture Occupations* range from \$14.00 to \$29.69.

**Exhibit 2a: Hourly Earnings for *Horticulture Occupations* in San Diego County<sup>4</sup>**

Occupational Title	Entry-Level Hourly Earnings (25 <sup>th</sup> Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 <sup>th</sup> Percentile)
Soil and Plant Scientists	\$29.69	\$33.63	\$52.06
Landscape Architects	\$24.36	\$37.54	\$47.96
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	\$22.13	\$28.49	\$37.54
Pesticide Handlers, Sprayers, and Applicators, Vegetation	\$14.89	\$18.10	\$22.06
Farmers, Ranchers, and Other Agricultural Managers	\$14.00	\$17.45	\$31.52

On average, the entry-level hourly earnings for *Horticulture Occupations* are \$21.02; this is more than the living wage for a single adult in San Diego County, which is \$18.43 per hour (Exhibit 2b).<sup>5</sup>

**Exhibit 2b: Average Hourly Earnings<sup>6</sup> for *Horticulture Occupations* in San Diego County<sup>7</sup>**



<sup>4</sup> Lightcast 2023.01; QCEW, Non-QCEW, Self-Employed.

<sup>5</sup> "Family Needs Calculator (formerly the California Family Needs Calculator)," Insight: Center for Community Economic Development, last updated 2021. [insightccd.org/family-needs-calculator/](https://insightccd.org/family-needs-calculator/).

<sup>6</sup> 10th and 25th percentiles could be considered entry-level wages, and 75th and 90th percentiles could be considered experienced wages for individuals who may have been in the occupation longer, received more training than others, etc.

<sup>7</sup> Lightcast 2023.01; QCEW, Non-QCEW, Self-Employed.

## Educational Supply

Educational supply for an occupation can be estimated by analyzing the number of awards in related Taxonomy of Programs (TOP) or Classification of Instructional Programs (CIP) codes.<sup>8</sup> There are 11 TOP codes and 11 CIP codes related to *Horticulture Occupations* (Exhibit 3).

**Exhibit 3: Related TOP and CIP Codes for *Horticulture Occupations*<sup>9</sup>**

TOP or CIP Code	TOP or CIP Program Title
TOP 0102.00	Animal Science
TOP 0102.30	Dairy Science
TOP 0103.00	Plant Science
TOP 0103.10	Agricultural Pest Control Adviser and Operator (Licensed)
TOP 0104.00	Viticulture, Enology, and Wine Business
TOP 0109.00	Horticulture
TOP 0109.10	Landscape Design and Maintenance
TOP 0109.30	Nursery Technology
TOP 0109.40	Turfgrass Technology
TOP 0112.00	Agriculture Business, Sales and Service
TOP 0115.10	Parks and Outdoor Recreation
CIP 01.0302	Animal/Livestock Husbandry and Production
CIP 01.0304	Crop Production
CIP 01.0306	Dairy Husbandry and Production
CIP 01.0505	Animal Training
CIP 01.0601	Applied Horticulture/Horticulture Operations, General
CIP 01.0605	Landscaping and Groundskeeping
CIP 01.0606	Plant Nursery Operations and Management
CIP 01.0607	Turf and Turfgrass Management
CIP 01.1105	Plant Protection and Integrated Pest Management
CIP 31.0301	Parks, Recreation and Leisure Facilities Management, General
CIP 31.0302	Golf Course Operation and Grounds Management

<sup>8</sup> TOP data comes from the California Community Colleges Chancellor's Office MIS Data Mart ([datamart.cccco.edu](http://datamart.cccco.edu)) and CIP data comes from the Integrated Postsecondary Education Data System ([nces.ed.gov/ipeds/use-the-data](http://nces.ed.gov/ipeds/use-the-data)).

<sup>9</sup> This brief uses a conservative estimate of program supply and only calculates awards from the TOP codes in Exhibit 3.

According to TOP data, four community colleges supply the region with awards for these occupations: Cuyamaca College, MiraCosta College, San Diego City College, and Southwestern College. According to CIP data, one non-community-college institution supplies the region with awards, San Diego State University (Exhibit 4).

**Exhibit 4: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions  
(Program Year 2017-18 through Program Year 2020-21 Average)**

TOP6 or CIP Code	TOP6 or CIP Program Title	3-Yr Annual Average CC Awards (PY18-19 to PY20-21)	Other Educational Institutions 3-Yr Annual Average Awards (PY17-18 to PY19-20)	3-Yr Total Average Supply (PY17-18 to PY20-21)
0103.00	Plant Science	<b>5</b>	<b>0</b>	<b>5</b>
	• San Diego City	5	0	
0104.00	Viticulture, Enology, and Wine Business	<b>2</b>	<b>0</b>	<b>2</b>
	• Cuyamaca	1	0	
	• MiraCosta	1	0	
0109.00	Horticulture	<b>8</b>	<b>0</b>	<b>8</b>
	• Cuyamaca	5	0	
	• MiraCosta	3	0	
0109.10	Landscape Design and Maintenance	<b>28</b>	<b>0</b>	<b>28</b>
	• Cuyamaca	13	0	
	• MiraCosta	12	0	
	• Southwestern	3	0	
0109.30	Nursery Technology	<b>14</b>	<b>0</b>	<b>14</b>
	• Cuyamaca	5	0	
	• MiraCosta	8	0	
	• Southwestern	1	0	
0109.40	Turfgrass Technology	<b>2</b>	<b>0</b>	<b>2</b>
	• Cuyamaca	2	0	
31.0301	Parks, Recreation and Leisure Facilities Management, General	<b>0</b>	<b>46</b>	<b>46</b>
	• San Diego State University	0	46	
			<b>Total</b>	<b>105</b>

## Demand vs. Supply

Comparing labor demand (annual openings) with labor supply<sup>10</sup> suggests that there is a **supply gap** for these occupations in San Diego County, with **505** annual openings and **105** awards. Comparatively, there are **10,342** annual openings in California and **2,210** awards, suggesting that there is also a supply gap across the state<sup>11</sup> (Exhibit 5).

**Exhibit 5: Labor Demand (Annual Openings) Compared with Labor Supply (Average Annual Awards)**

	<b>Demand</b> (Annual Openings)	<b>Supply<sup>12</sup></b> (Total Annual Average Supply)	<b>Supply Gap or Oversupply</b>
San Diego	505	105	<b>400</b>
California	10,342	2,210	<b>8,132</b>

**Please note:** This is a basic analysis of supply and demand of labor. The data does not include workers currently in the labor force who could fill these positions or workers who are not captured by publicly available data. This data should be used to discuss the potential gaps or oversupply of workers; however, it should not be the only basis for determining whether or not a program should be developed.

<sup>10</sup> Labor supply can be found from two different sources: Lightcast or the California Community Colleges Chancellor's Office MIS Data Mart. Lightcast uses CIP codes while MIS uses TOP codes. Different coding systems result in differences in the supply numbers.

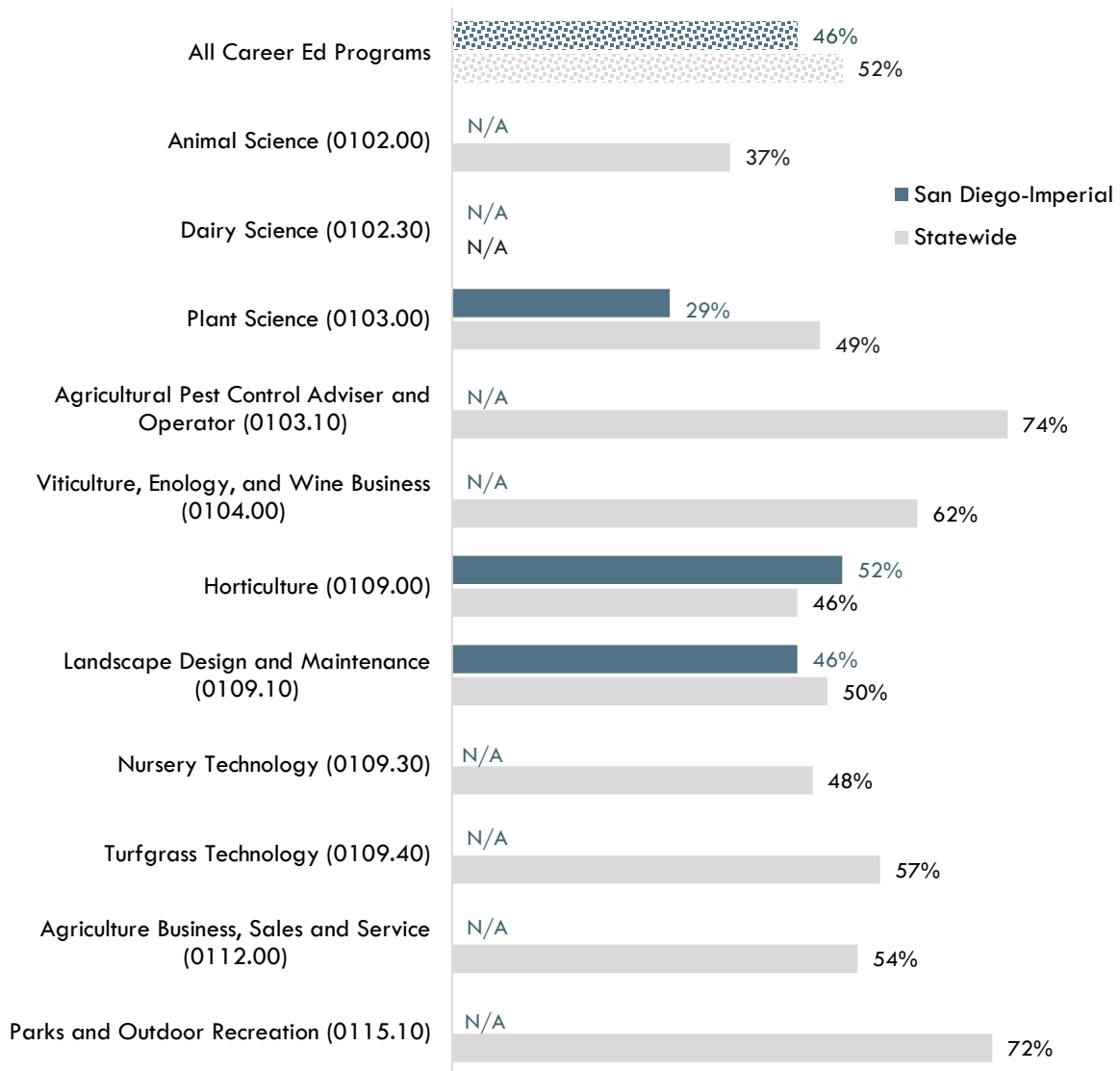
<sup>11</sup> "Supply and Demand," Centers of Excellence Student Outcomes, <https://coecc.net/our-resources/>.

<sup>12</sup> Awards included: associate degree; award <1 year; award 1<2 years; and postsecondary awards.

## Student Outcomes and Regional Comparisons

According to the California Community Colleges LaunchBoard, 29 to 52 percent of students in the San Diego-Imperial region earned a living wage after completing a program related to *Horticulture Occupations*, compared 37 to 74 percent statewide and 52 percent of students in Career Education programs in general across the state (Exhibit 6a).<sup>13</sup>

**Exhibit 6a: Percentage of Students Who Earned a Living Wage by Program, PY2019-20<sup>14</sup>**



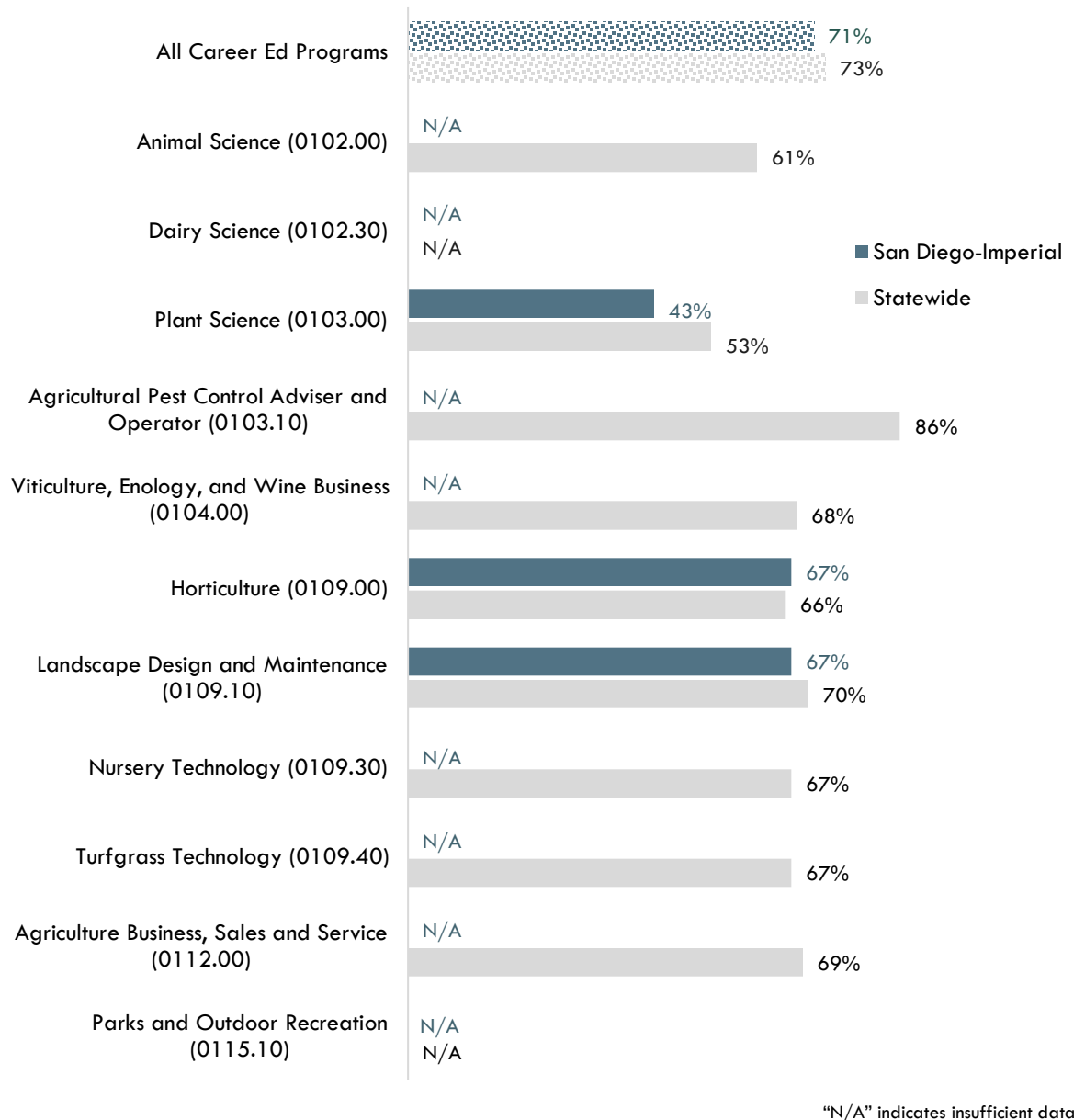
"N/A" indicates insufficient data

<sup>13</sup> "California Community Colleges Strong Workforce Program," California Community Colleges, [calpassplus.org/LaunchBoard/SWP.aspx](http://calpassplus.org/LaunchBoard/SWP.aspx).

<sup>14</sup> Most recent year with available data is Program Year 2019-20. Among completers and skills builders who exited, the percentage of students who attained a living wage.

According to the California Community Colleges LaunchBoard, 43 to 67 percent of students in the San Diego-Imperial region obtained a job closely related to their field of study after completing a program related to *Horticulture Occupations*, compared to 53 to 86 percent statewide and 73 percent of students in Career Education programs in general across the state (Exhibit 6b).<sup>15</sup>

**Exhibit 6b: Percentage of Students in a Job Closely Related to Field of Study by Program, PY2018-19<sup>16</sup>**



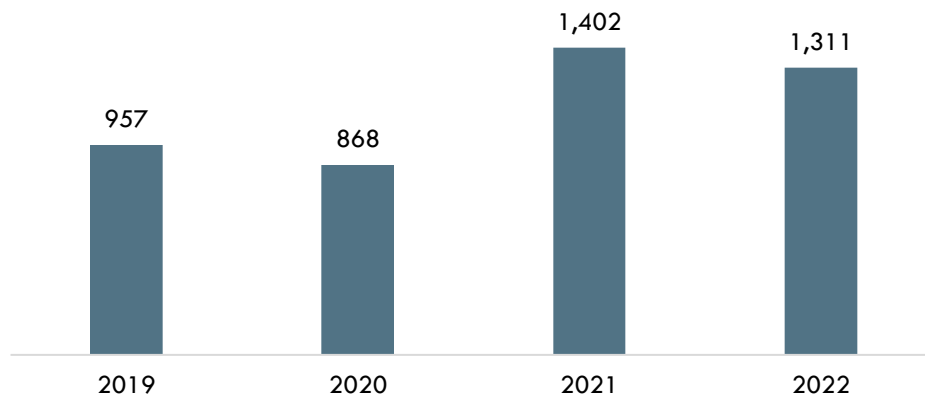
<sup>15</sup> "California Community Colleges Strong Workforce Program," California Community Colleges, [calpassplus.org/LaunchBoard/SWP.aspx](http://calpassplus.org/LaunchBoard/SWP.aspx).

<sup>16</sup> Most recent year with available data is Program Year 2018-19. Percentage of Students in a Job Closely Related to Field of Study: Among students who responded to the CTEOS, the percentage reporting employment in the same or similar field as their program of study.

## Online Job Postings

This report analyzes not only historical and projected (traditional LMI) data, but also recent data from online job postings (real-time LMI). Online job postings may provide additional insight about recent changes in the labor market that are not captured by historical data. Between 2019 and 2022, there was an average of 1,135 online job postings per year for *Horticulture Occupations* in San Diego County (Exhibit 7). Please note that online job postings do **not** equal labor market demand; demand is represented by annual job openings (see Exhibit 1b). While this brief includes online jobs postings data to help with curriculum development, the community colleges should note that this type of data is impacted by several variables: employers may post a position multiple times to increase the pool of applicants; a job posting can remain posted after a business decides not to fill a position; or an employer may use one posting to fill multiple positions, for example.

**Exhibit 7: Number of Online Job Postings for *Horticulture Occupations* in San Diego County (2019-2022)<sup>17</sup>**



<sup>17</sup> Lightcast; "Job Posting Analytics." 2019-2022.

## Top Employers

Between January 1, 2020 and December 31, 2022, the top five employers in San Diego County for *Horticulture Occupations* were GPAC, Brightview, Apple, Juniper Landscape Company, and Urban Arena based on online job postings (Exhibit 8).

**Exhibit 8: Top Employers for *Horticulture Occupations* in San Diego County<sup>18</sup>**

Top Employers	
<ul style="list-style-type: none"><li>• GPAC</li><li>• Brightview</li><li>• Apple</li><li>• Juniper Landscape Company</li><li>• Urban Arena</li></ul>	<ul style="list-style-type: none"><li>• Spruce Grove</li><li>• TruGreen</li><li>• Schnetz Landscape</li><li>• Emerald Landscaping</li><li>• Ecological Farming Association</li></ul>

## Education, Skills, and Certifications

*Horticulture Occupations* have a national educational attainment ranging from a high school diploma or equivalent to a bachelor's degree (Exhibit 9a).

**Exhibit 9a: National Educational Attainment for *Horticulture Occupations*<sup>19</sup>**

Occupational Title	Typical Entry-Level Education
Landscape Architects	Bachelor's degree
Soil and Plant Scientists	Bachelor's degree
Farmers, Ranchers, and Other Agricultural Managers	High school diploma or equivalent
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	High school diploma or equivalent
Pesticide Handlers, Sprayers, and Applicators, Vegetation	High school diploma or equivalent

<sup>18</sup> Lightcast; "Job Posting Analytics." 2020-2022.

<sup>19</sup> Lightcast 2023.01; QCEW, Non-QCEW, Self-Employed.

Based on online job postings between January 1, 2020 and December 31, 2022 in San Diego County, employers posted a **master's degree or higher** as the most requested educational requirement for *Horticulture Occupations* (Exhibit 9b).<sup>20</sup>

**Exhibit 9b: Educational Requirements for *Horticulture Occupations* in San Diego County<sup>21</sup>**

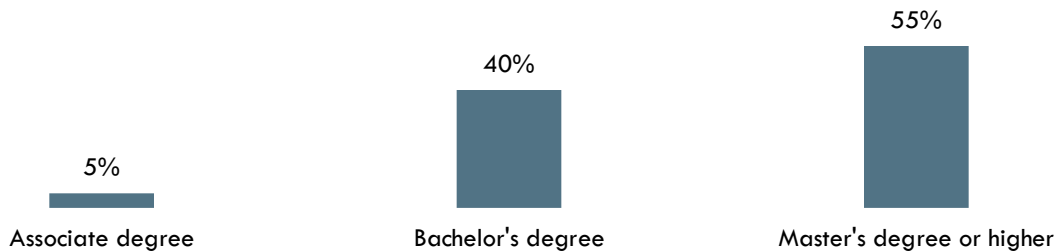


Exhibit 10 lists the top specialized, soft, and software skills that appeared in online job postings between January 1, 2020 and December 31, 2022.

**Exhibit 10: Top Skills for *Horticulture Occupations* in San Diego County<sup>22</sup>**

Specialized Skills	Soft Skills	Software Skills
<ul style="list-style-type: none"> <li>• Landscaping</li> <li>• Irrigation</li> <li>• Landscape Architecture</li> <li>• Construction</li> <li>• Landscape Design</li> <li>• Landscape Maintenance</li> <li>• AutoCAD</li> <li>• SketchUp</li> <li>• Bilingual</li> <li>• Biology</li> <li>• Pruning</li> <li>• Heavy Equipment</li> <li>• Production Management</li> <li>• Fertilizers</li> <li>• Color Management</li> </ul>	<ul style="list-style-type: none"> <li>• Communications</li> <li>• Customer Service</li> <li>• Management</li> <li>• Operations</li> <li>• Detail Oriented</li> <li>• Leadership</li> <li>• Writing</li> <li>• Self-Motivation</li> <li>• Research</li> <li>• Sales</li> <li>• Lifting Ability</li> <li>• Planning</li> <li>• Problem Solving</li> <li>• Spanish Language</li> <li>• Professionalism</li> </ul>	<ul style="list-style-type: none"> <li>• AutoCAD</li> <li>• SketchUp</li> <li>• Microsoft Excel</li> <li>• Microsoft Outlook</li> <li>• Adobe Creative Suite</li> <li>• Autodesk Revit</li> <li>• Spreadsheets</li> <li>• Safari</li> <li>• Adobe Photoshop</li> <li>• Microsoft PowerPoint</li> <li>• Lumion</li> <li>• Geographic Information Systems</li> <li>• Adobe InDesign</li> <li>• Microsoft Word</li> <li>• Microsoft Access</li> </ul>

<sup>20</sup> Lightcast; "Job Posting Analytics." 2020-2022.

<sup>21</sup> "Educational Attainment for Workers 25 Years and Older by Detailed Occupation," Bureau of Labor Statistics, last modified April 9, 2021. [bls.gov/emp/tables/educational-attainment.htm](https://bls.gov/emp/tables/educational-attainment.htm).

<sup>22</sup> Lightcast; "Job Posting Analytics." 2020-2022.

Exhibit 11 lists the top certification that appeared in online job postings between January 1, 2020 and December 31, 2022.

**Exhibit 11: Top Certification for *Horticulture Occupations* in San Diego County<sup>23</sup>**

Top Certification in Online Job Postings

1. Pesticide Applicator License
  2. First Aid Certification
  3. CDL Class C License
  4. Commercial Driver's License (CDL)
  5. Certified Arborist
  6. LEED Accredited Professional (AP)
  7. Architecture License
  8. Landscape Architect License
  9. Security Clearance
  10. Food Handler's Card
  11. Qualified Security Assessor
  12. Qualified Water Efficient Landscaper (QWEL)
  13. ACI Concrete Field Testing Technician
  14. Project Management Professional Certification
  15. Soils Special Inspector
- 

<sup>23</sup> Lightcast; "Job Posting Analytics." 2020-2022.

Prepared by:

Tina Ngo Bartel, Director ([tngobartel@miracosta.edu](mailto:tngobartel@miracosta.edu))

John Edwards, Research Analyst ([jedwards@miracosta.edu](mailto:jedwards@miracosta.edu))

Center of Excellence for the San Diego & Imperial Counties Community Colleges



### **Important Disclaimers**

All representations included in this report have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. This study examines the most recent data available at the time of the analysis; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and the report findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host district, nor California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.