



Agriculture and Natural Resources Industry Sector

Agriculture is one of California's largest and most vital industries, which generates about \$32 billion in products and more than \$125 billion of economic impact each year. Ten percent of California workers are engaged in agriculture and related occupations. Because the demand for agricultural specialists throughout the state in both urban and rural areas is high, there are more job openings than there are qualified applicants. Within the Agriculture and Natural Resources pathways, workers in some of the fastest-growing and/or highest-wage occupations in California include agricultural marketing and sales personnel, agricultural engineers, laboratory and research technicians, animal reproduction specialists, environmental scientists, landscape and turf managers, and pest management specialists.

Students in the Agriculture and Natural Resources industry sector are engaged in an instructional program that integrates academic and technical preparation, with a focus on career awareness, career exploration, and skill preparation in seven pathways. The pathways emphasize real-world, occupationally relevant experiences of significant scope and depth in Agricultural Business, Agricultural Mechanics, Agriscience, Animal Science, Forestry and Natural Resources, Ornamental Horticulture, and Plant and Soil Science. Integral components of classroom and laboratory instruction, supervised agricultural experience projects, and leadership and interpersonal skill development prepare students for continued training, advanced educational opportunities, and entry into a career.

Agriculture and Natural Resources Industry Sector Pathways:

- *Agricultural Business*
- *Agricultural Mechanics*
- *Agriscience*
- *Animal Science*
- *Forestry and Natural Resources*
- *Ornamental Horticulture*
- *Plant and Soil Science*

Entry Level Careers

(with high school diploma)

- Nursery Worker
- Forestry Aide
- Crop Inspector
- Irrigator
- Milker
- Park Aide
- Gardener/Groundskeeper
- Feeder
- Ag Supplies Warehouse
- Ag Service Technician Trainee
- Ag Equipment Operator
- Ag Business Clerk
- Farmworkers and Laborers, Crop

Technical Level Careers

(with AA or AS degree or certificate)

- Land Use Planning Technician
- Field Representative Technician
- Animal Health Technician
- Greenhouse Grower/Manager
- Soil Conservation Technician
- Landscape Designer
- Forestry Technician
- Artificial Inseminator
- Ag Sales and Service Technician
- Ag Import/Export Technician
- Ag Equipment Service
- Ag Equipment Set-up Foreperson
- Farm Equipment Mechanics

Professional Level Careers

(with BS or BA degree)

- Soil/Water Manager
- Agronomist
- Country Planner/Landscape
- Animal Nutritionist
- International Ag Pest Control Advisor
- Veterinarian
- Plant/Animal Geneticist
- Forester/Ranger
- Architecture
- Ag Teacher/Farm/Home Advisor
- Ag Research/Developer
- Ag Engineer
- Ag Business Owner/Operator

Forestry and Natural Resources Pathway

Sample CTE Courses*

Education Level and Related Occupations**

Introductory	Concentration	Capstone	High School Diploma	Certification and/or AA Degree	Bachelor's Degree or Higher
<ul style="list-style-type: none"> Introduction to Agriculture 	<ul style="list-style-type: none"> Agricultural Biology Integrated Agricultural Science 	<ul style="list-style-type: none"> Forestry Natural Resource Management Rural Recreation Wildlife/Fisheries Management 	<ul style="list-style-type: none"> Park Ranger Aide Soil Conservation Aide Wilderness Firefighter 	<ul style="list-style-type: none"> Hunting Preserve Manager Surveying Technician Tree Farm Supervisor 	<ul style="list-style-type: none"> Aquatic/Game Biologist Soil Conservationist State Park Manager

Ornamental Horticulture Pathway

Sample CTE Courses*

Education Level and Related Occupations**

Introductory	Concentration	Capstone	High School Diploma	Certification and/or AA Degree	Bachelor's Degree or Higher
<ul style="list-style-type: none"> Introduction to Agriculture Introduction to Ornamental Horticulture 	<ul style="list-style-type: none"> Agricultural Biology Floriculture Integrated Agricultural Science Nursery/Greenhouse Production 	<ul style="list-style-type: none"> Advanced Ornamental Horticulture Irrigation and Water Management Landscape Design and Maintenance Turf and Golf Management 	<ul style="list-style-type: none"> Landscape Equipment Operator Nursery Sales Associate Tree Trimmer and Pruner 	<ul style="list-style-type: none"> Floral Designer Garden Equipment and Supplies Dealer Landscape Contractor+ 	<ul style="list-style-type: none"> Entomologist Greenhouse and Nursery Manager Landscape Architect+

Plant and Soil Science Pathway

Sample CTE Courses*

Education Level and Related Occupations**

Introductory	Concentration	Capstone	High School Diploma	Certification and/or AA Degree	Bachelor's Degree or Higher
<ul style="list-style-type: none"> Introduction to Agriculture 	<ul style="list-style-type: none"> Agricultural Biology Integrated Agricultural Science Plant and Soil Science 	<ul style="list-style-type: none"> Agricultural Entomology and Pest Control Crop Science Environmental Science Viticulture 	<ul style="list-style-type: none"> Crop Farmer Field Assistant Insect Monitor/Collector 	<ul style="list-style-type: none"> Field Representative Tissue Culture Technician Viticulturist 	<ul style="list-style-type: none"> Agriculture Association Manager Integrated Pest Management Specialist Pest Control Advisor+

*Sample CTE Courses are from the Career Technical Education Framework for California Public Schools (California Department of Education: 2007, <http://www.cde.ca.gov/re/pn/fd/>)

**Visit ASSIST (www2.assist.org/browseAreas.do) for community college and UC/CSU information and California Career Zone (www.cacareerzone.org) for occupation information.

+This occupation requires certification or licensure.

Related Career Technical Student Organization: FFA (<http://www.calaged.org>)

Additional Industry Sector information available through the California Central Valley Consortium Agricultural Education Tech Prep (<http://www.agedtechprep.com/>).

Agricultural Business Pathway

Sample CTE Courses*

Education Level and Related Occupations**

Introductory	Concentration	Capstone	High School Diploma	Certification and/or AA Degree	Bachelor's Degree or Higher
<ul style="list-style-type: none"> Introduction to Agriculture 	<ul style="list-style-type: none"> Agricultural Biology Agricultural Computers Animal Science Integrated Agricultural Science Ornamental Horticulture Plant Science 	<ul style="list-style-type: none"> Agricultural Business Management Agricultural Economics and Policy Agricultural Sales and Service 	<ul style="list-style-type: none"> Agricultural Lending Office Clerk Agricultural Retail Salesperson Equipment Parts Salesperson 	<ul style="list-style-type: none"> Customer Service Representative Farm Accountant Farm Realtor/Appraiser 	<ul style="list-style-type: none"> Agricultural Commodity Broker+ Agricultural Sales and Marketing Manager Agricultural Supplies Purchasing Agent/Buyer

Agricultural Mechanics Pathway

Sample CTE Courses*

Education Level and Related Occupations**

Introductory	Concentration	Capstone	High School Diploma	Certification and/or AA Degree	Bachelor's Degree or Higher
<ul style="list-style-type: none"> Introduction to Agricultural Mechanics Introduction to Agriculture 	<ul style="list-style-type: none"> Advanced Agricultural Mechanics Agricultural Small Engines Agricultural Welding 	<ul style="list-style-type: none"> Agricultural Fabrication/Construction Agricultural/Farm Power and Equipment 	<ul style="list-style-type: none"> Farm Equipment Operator Farm Equipment Parts Person Welder 	<ul style="list-style-type: none"> Equipment Fabricator Equipment Service Technician Heavy Equipment Operator 	<ul style="list-style-type: none"> Agricultural Engineer Agricultural Mechanics Teacher+ Irrigation Engineer

Agriscience Pathway

Sample CTE Courses*

Education Level and Related Occupations**

Introductory	Concentration	Capstone	High School Diploma	Certification and/or AA Degree	Bachelor's Degree or Higher
<ul style="list-style-type: none"> Introduction to Agriculture 	<ul style="list-style-type: none"> Agricultural Biology Agriscience 	<ul style="list-style-type: none"> Advanced Plant and Animal Science Agricultural Biotechnology Agricultural Business Management 	<ul style="list-style-type: none"> Laboratory Aide Laboratory Animal Caretaker Plant Propagator 	<ul style="list-style-type: none"> Animal/Plant Laboratory Technician Food Processing Technician Quality Assurance Specialist 	<ul style="list-style-type: none"> Agricultural Science Teacher+ Biotechnology Specialist Plant/Animal Geneticist

Animal Science Pathway

Sample CTE Courses*

Education Level and Related Occupations**

Introductory	Concentration	Capstone	High School Diploma	Certification and/or AA Degree	Bachelor's Degree or Higher
<ul style="list-style-type: none"> Introduction to Agriculture 	<ul style="list-style-type: none"> Agricultural Biology Animal Science 	<ul style="list-style-type: none"> Agricultural Biotechnology Animal and Plant Physiology Veterinary Technician 	<ul style="list-style-type: none"> Farm and Ranch Assistant Feed Store Clerk Veterinary Hospital Assistant 	<ul style="list-style-type: none"> Breeding Technician+ Livestock Feed Sales Meat Inspector 	<ul style="list-style-type: none"> Animal Nutritionist Processing Plant Manager Veterinarian+

*Sample CTE Courses are from the Career Technical Education Framework for California Public Schools (California Department of Education: 2007, <http://www.cde.ca.gov/re/pn/fd/>)

**Visit ASSIST (www2.assist.org/browseAreas.do) for community college and UC/CSU information and California Career Zone (www.cacareerzone.org) for occupation information.

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Related Career Technical Student Organization: FFA (<http://www.calaged.org>)

Additional Industry Sector information available through the California Central Valley Consortium Agricultural Education Tech Prep (<http://www.agedtechprep.com/>).

CAREER OPPORTUNITIES IN

AGRICULTURE AND NATURAL RESOURCES INDUSTRY SECTOR

10 TIPS FOR CHOOSING THE RIGHT CAREER FOR YOU

*How does a person know what career to work toward?
There is no perfect answer, but the following 10 tips will
get you off to a good start.*

- 1 Get to know yourself** – Complete more than one self-assessment test.
- 2 Identify your strengths and weaknesses** – What do you do well and what do you not do well?
- 3 Develop an inventory of careers** – Write down some careers that might interest you.
- 4 Research different careers** – Talk to others and use the Internet.
- 5 Write the pros and cons** – List positives and negatives about the careers that interest you.
- 6 Network** – Discuss your ideas with others.
- 7 Talk with people who work in your area of interest** – Family and friends are great resources.
- 8 Find a mentor** – Find someone with whom you can discuss your career selection.
- 9 Experiment** – Take a related class or part-time job.
- 10 Don't give up** – "If there is a will, there is a way."



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Plan For Success
Visit statecenter.com/industrysectors





Because agriculture is California's most important economic industry, California is often called the breadbasket of the world. If you love nature, animals, or growing things, the Agriculture and Natural Resources Sector may hold a great career for you.

A strong demand exists for well-trained, environmentally-sensitive individuals to provide the state, nation, and world with food, fiber, and a healthy environment. The Agriculture and Natural Resources Industry Sector provides a foundation for agriculture students in California. This sector emphasizes real-world, occupationally-relevant experiences. Classroom and laboratory instruction, supervised agricultural experience, projects, leadership, and interpersonal skill development activities prepare students for advanced training, higher education, and entry to a career.

Web sites
for further information:

www.californiacareers.info

www.whodouwant2be.com

www.californiacolleges.edu

www.edd.ca.gov/Jobs_and_Training/

Career Pathways

Agricultural Business Pathway

Agricultural business students will find many job opportunities in the managerial and financial ranks. Agriculture in the United States is big business that is becoming international in scope. If you are interested in traveling to other countries, agricultural business might be the perfect career for you.

CAREERS/CAREER AREAS:

- Landscape Manager
- Ag Marketing
- Farm Realty
- Appraiser
- Timber Manager
- Fisheries Manager
- Accounting
- Irrigation Manager
- Product Broker/Buyer
- Agricultural Lending Officer
- Economist
- Sales
- Banking
- Floral Shop Owner
- Aquaculture
- Farm Manager

Agricultural Mechanics Pathway

Today's agricultural engineering and power equipment industry uses complex technology that combines fabrication, hydraulic power, electronic controls, and powerful engines. Getting your hands dirty may be necessary, but your knowledge will play a larger role in finding a successful career in agricultural mechanics. Technicians are needed to diagnose, test, and repair equipment. Mechanical skills needed for construction, operation, maintenance, and repair of agricultural equipment involving wood, metal, concrete, electrical, plumbing, and welding are all part of an agricultural mechanics career.

CAREERS/CAREER AREAS:

- Equipment Fabricator
- Irrigation Engineer
- Equipment Operator
- Welding/Metal Fabrication
- Power System Mechanic
- Irrigation System Designer
- Precision Farming Technician
- Farm Facility Construction
- Land Leveling
- Troubleshooting

Agriscience Pathway

Agriscience is the basis of past and future developments in agriculture. It provides a broad understanding of agricultural knowledge, develops awareness of career opportunities in agriculture, while providing occupationally-relevant experiences, cooperative group learning, and leadership skills. Many agricultural scientists work in basic or applied research and development. All agriculture-related careers benefit from knowledge and experience in the Agriscience Pathway.

CAREERS/CAREER AREAS:

- Enology
- Plant Propagation
- Plant/Animal Genetics
- Agriculture Pest Management
- Hydraulic Engineer
- Food Processing
- Production Management
- Biotechnology
- Ag Chemicals

Animal Science Pathway

Animal production for food, fiber, recreation, and companionship is represented in the Animal Science Pathway. Knowledge of the diet, genetics, habitat, anatomy, physiology, nutrition, production, behavior, health, and welfare of large, small, and specialty animals, birds, and poultry is part of career preparation in the Animal Science Pathway.

CAREERS/CAREER AREAS:

- Animal Breeding
- Fish Farming
- Cattle Ranching
- Pack Station
- Meat Inspector
- Zoo and Veterinary Work and Management
- Animal Trainer
- Artificial Insemination
- Horseshoeing
- Poultry Farming
- Animal Nutritionist

Forestry and Natural Resources Pathway

Forestry and natural resources workers need an understanding of the relationships between humans, the environment, and natural resources. Water resources and management; soil conservation; wildlife preservation and management; forest and fire management; and lumber production are all related to the conservation, use, and protection of our natural resources.

CAREERS/CAREER AREAS:

- Park Ranger
- Firefighter
- Logging
- Hydrologist
- Ecologist
- Grounds Worker
- Environmental Engineer
- Forest Resources Technologist
- Ski Resort Manager
- Surveyor
- Range/Timber Manager
- Campground Manager
- Guide

Ornamental Horticulture Pathway

What is the difference between a weed and a flower? They say it is all in the eye of the beholder! Ornamental horticulture workers are involved in the development, production, and maintenance of nursery, landscaping, and floral industry-related products. Necessary knowledge of related areas include plant identification, plant physiology, soil science, and plant reproduction, as well as landscaping design, installation, and maintenance.

CAREERS/CAREER AREAS:

- Floriculture
- Tree Trimming
- Plant Curator
- Nursery Production
- Greenhouse Work
- Landscaper or Groundskeeper
- Golf Course and Park Management
- Plant and Turf Propagation
- Retail Nursery Work
- Landscape Design
- Entomologist
- Floral Designer

Plant and Soil Science Pathway

The Plant and Soil Science Pathway involves plant classification, physiology, reproduction, plant breeding, biotechnology, pest management, and pathology. Workers in this area must also learn about soil management, water, pests, and equipment, as well as cultural and harvest practices.

CAREERS/CAREER AREAS:

- Soil Conservation
- Horticulturist
- Irrigation
- Turf Grass Production
- Pest Control Advisor
- Ag Field Representative
- Waste Water Specialist
- Plant Biologist
- Entomology
- Soil Nutrition
- Viticulture
- Botanist
- Orchardist
- Crop Farmer

TIPS FOR JOB SEEKERS

How can you improve your chances of getting a job? Applying for a job is the easy part, but getting it can be more of a challenge. Following these five tips can help you reach your goal:

1 The Job

- Determine your interests: talk to others and consider your hobbies and talents
- Search “career assessments” on the Internet

2 The Resume

- Should be easy to read: not too long, too wordy or too cluttered
- Make it powerful
- Show you can cooperate, you can learn, and you can do

3 The Application

- Make it neat, complete and accurate
- Include recommendations from teachers, employers, coaches, friends, etc.

4 The Interview

- Show enthusiasm: it separates the winners from the losers
- Dress appropriately/similar to those on the job

5 The Follow-up

- Send a thank you note
- Call to see if a decision has been made
- If not, ask, “Am I still a candidate?”
- If you are, ask, “Is it okay if I call back in a couple of days?”



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