USDA Employment Opportunities Reports

AGENDA

1. 1980-2015 Reports – A Brief History
4. The Big Picture and Market Factors – 2015-2020
5. Management and Business Occupations
6. Science and Engineering Occupations
7. Agricultural and Forestry Production Occupations
8. Education, Communication, and Governmental Services Occupations
USDA Employment Opportunities Reports

Brief History

The Food and Agriculture Act of 1977 (PL 95-113) designated the U.S. Department of Agriculture as the lead Federal agency for research, extension, and teaching in the food and agricultural sciences.

Oversight of higher education programs in agriculture was transferred from the U.S. Office of Education.
The Food and Agriculture Act of 1977 (PL 95-113)
The Secretary of Agriculture shall keep informed of the nation’s need for research, extension, teaching, and manpower development in the food and agricultural sciences.

1978
Office of Higher Education was established in The Science and Education Administration (SEA) of the U.S. Department of Agriculture.
1980


Kyle Jane Coulter
Marge Stanton

USDA Employment Opportunities Reports

1985 - 1990

Employment Opportunities for College Graduates in the Food and Agricultural Sciences – Agriculture, Natural Resources and Veterinary Medicine

Kyle Jane Coulter
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Allan D. Goecker

1995 - 2000

Employment Opportunities for College Graduates in the Food and Agricultural Sciences – Agriculture, Natural Resources, and Veterinary Medicine

Kyle Jane Coulter
Marge Stanton
Allan D. Goecker

1995 - 2000 Education Consultants: Roger Bruene, Daniel D. Godfrey, Kim Harris, Raymond A. Miller, Gary Schneider, W. David Shoup, H. Dean Sutphin
Employment Opportunities for College Graduates in the Food and Agricultural Sciences – Agriculture, Natural Resources, and Veterinary Medicine

Allan D. Goecker
Jeffrey L. Gilmore
Christopher M. Whatley

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2005 - 2010

Employment Opportunities for College Graduates in the U.S. Food, Agricultural, and Natural Resources System

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Jeffrey L. Gilmore
Ella Smith
P. Gregory Smith


Allan D. Goecker
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Rebecca Goetz

USDA Employment Opportunities Reports

2015 - 2020

Employment Opportunities for College Graduates in Food, Agriculture, Renewable Natural Resources, and Environment – United States

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Rebecca Goetz
Ray Ali

2015-2020 Employment Opportunities For College Graduates in Food, Agriculture, Renewable Natural Resources, and Environment

Education Consultants

Members of

Association of Public and Land-grant Universities Academic Programs Section (APLU-APS)

Non Land-grant Agriculture and Renewable Resources Universities (NARRU)
Employment Opportunities

U.S. Department of Labor
Bureau of Labor Statistics (BLS)

Occupational Employment Data for 2012 With Projections to 2022

Published in Monthly Labor Review
December, 2013
Employment Opportunities

U.S. Department of Labor
Bureau of Labor Statistics (BLS)
Occupational Employment Projections to 2022

“Projected occupational employment is based on projected industry employment. BLS projections are a measure of how employment in industries and occupations grow if the economy were to operate at its full potential a decade from now.”
Employment Opportunities
U.S. Department of Labor
Bureau of Labor Statistics (BLS)
Occupational Employment Projections to 2022

“Not all occupations within an industry grow at the same rate, so BLS analysts make adjustments to occupational distributions within industries before arriving at final occupational projections.”
Employment Opportunities

U.S. Department of Labor
Bureau of Labor Statistics (BLS)
Occupational Employment Projections to 2022

“In addition to projecting occupational growth—that is, the number of new jobs expected—BLS provides estimates of the number of jobs that will need to be filled in each occupation as workers change occupations, retire, or leave the labor force and need to be replaced.”
Employment Opportunities

U.S. Department of Labor
Bureau of Labor Statistics (BLS)
Occupational Employment Projections to 2022

“Projections of job openings from replacement needs, when combined with projected job openings from occupational growth, provide a more complete picture of the opportunities jobseekers will encounter in the coming decade than is provided by projected employment alone.”
Employment Opportunities

BLS Occupational Employment Data for 2012 With Projections to 2022

- **ALL OCCUPATIONS:** +10.5%
- Management Occupations: 7.2%
- Business and Financial Occupations: 12.5%
- Computer and Mathematical Occupations: 18.0%
- Architecture and Engineering Occupations: 7.3%
Employment Opportunities

BLS Occupational Employment Data for 2012 With Projections to 2022

- Life, Physical, & Social Science Occupations: 10.1%
- Community and Social Service Occupations: 17.2%
- Education, Training and Library Occupations: 11.1%
- Healthcare Practitioner Occupations: 21.5%
- Protective Services Occupations: 7.9%
Employment Opportunities

BLS Occupational Employment Data for 2012 With Projections to 2022

- Sales and Related Occupations: 7.3%
- Farming, Fishing and Forestry Occupations: -3.4%
- Construction and Extraction Occupations: 21.4%
- Transportation Occupations: 8.6%
- Food Preparation and Serving Occupations: 9.4%
Employment Opportunities

BLS Occupational Employment Data for 2012 With Projections to 2022

• 2012 BLS National Employment Matrix Included 818 Occupations.

• Total Job Openings Were Projected for Each Occupation Due to Growth and Replacements During 2012-2022.
Employment Opportunities

Food, Agriculture, Renewable Natural Resources and Environment Occupations

Step #1

• Investigators selected 166 of the 818 BLS occupations in which college graduates with Food, Agriculture, Renewable Natural Resources, or Environmental Expertise would be expected to compete for jobs.

• For this study, college graduates were those having a baccalaureate or higher degree.
Employment Opportunities

Food, Agriculture, Renewable Natural Resources and Environment Occupations

Step #2

For each selected occupation, BLS projected job openings due to growth and replacements during 2012-2022 were divided by 10 to yield “Average Annual Openings.”
Employment Opportunities

Food, Agriculture, Renewable Natural Resources and Environment Occupations

Step #3

For each of the 166 selected occupations, investigators estimated the percentage of jobs that would require Food, Agriculture, Renewable Natural Resources, or Environmental Expertise.
Employment Opportunities
Food, Agriculture, Renewable Natural Resources and Environment Occupations

Step #3 – Example A

1. BLS Projected Openings for “Food Scientists and Technologists” During 2012-2022 – 8,500

2. Average Annual Openings – 850

3. Needed Expertise – Food, Agriculture........ 100%

4. Annual Job Openings For Report - 850
Employment Opportunities

Food, Agriculture, Renewable Natural Resources and Environment Occupations

Step #3 – Example B

1. BLS Projected Openings for “Civil Engineers” During 2012-2022 – 120,100

2. Average Annual Openings – 12,010

3. Needed Expertise – Food, Agriculture…… 5%

4. Annual Job Openings For Report - 601
Employment Opportunities

Allocation to Occupational Clusters

Step #4

Projected job openings were allocated among the four occupational clusters.

Management and Business
Science and Engineering
Agricultural and Forestry Production
Education, Communication, & Governmental Services
Employment Opportunities

Allocation of “Food Scientists and Technologists” Among Occupational Clusters

Step #4 – Example A

1. Management and Business – 10%
2. Science and Engineering – 80%
3. Agricultural and Forestry Production – 0%
4. Education, Communication, and Governmental Services – 10%
Employment Opportunities

Allocation of “Financial Managers” Among Occupational Clusters

Step #4 – Example B

1. Management and Business – 60%
2. Science and Engineering – 20%
3. Agricultural and Forestry Production – 10%
4. Education, Communication, and Governmental Services – 10%
Graduates

National Center for Education Statistics (NCES)
U.S. Department of Education

“The National Center for Education Statistics (NCES) is the primary federal entity for collecting and analyzing data related to education.”
Graduates

National Center for Education Statistics (NCES)
The Integrated Postsecondary Education Data System (IPEDS)
Classification of Instructional Programs (CIPS)

“The Classification of Instructional Programs (CIPS) provides a taxonomic scheme that supports the accurate tracking and reporting of fields of study and program completions activity.”
Graduates

National Center for Education Statistics (NCES)
The Integrated Postsecondary Education Data System (IPEDS)
Classification of Instructional Programs (CIPS)

For this study, included data were for graduates who earned a baccalaureate or higher degree in U.S. public and private colleges and universities (Excludes for-profit institutions.)
Graduates

Qualified Graduates – Agriculture Programs

Step #1

Investigators selected 108 of the 1,848 instructional programs included in the NCES CIPS taxonomy.

01 – Agriculture, Agricultural Operations, and Related Services

03 – Natural Resources and Conservation

51 – Veterinary Medicine (Health Professions and Related Programs)

Selected instructional programs from other CIPS series, i.e., Agricultural Engineering, Plant Genetics, Agricultural Education.
Graduates

Qualified Graduates – Agriculture Programs

Step #2

For each of the 108 selected instructional programs, investigators estimated the percentage of graduates by degree level that would be expected to have Food, Agriculture, Renewable Natural Resources, or Environmental Expertise.
Graduates

Adjustments – Agriculture Graduates

Step #3

Bachelor’s Graduates
- **2%** Reduction – Do Not Enter Workforce
- **25%** Reduction – Continue Education

Master’s Graduates
- **19%** Reduction – Continue Education

Doctoral Graduates
- **30%** Reduction – Non-resident Aliens Return Home

Overall Adjustment
- **3%** Increase – Growing Enrollments in Agriculture Programs
Graduates

Agriculture Graduates - Allocation to Occupational Clusters

Step #4

Graduates in the 108 Agriculture programs were allocated among the four occupational clusters.

- Management and Business
- Science and Engineering
- Agricultural and Forestry Production
- Education, Communication, and Governmental Services
Graduates

Allocation of “Crop Production” Graduates Among Occupational Clusters

Step #4 – Example A

1. Management and Business – 30%
2. Science and Engineering – 5%
3. Agricultural and Forestry Production – 60%
4. Education, Communication, and Governmental Services – 5%
Graduates

Allocation of “Ornamental Horticulture” Graduates Among Occupational Clusters

Step #4 – Example B

1. Management and Business – 70%
2. Science and Engineering – 5%
3. Agricultural and Forestry Production – 20%
4. Education, Communication, and Governmental Services – 5%
Investigators selected 228 of the 1,848 instructional programs included in the NCES CIPS taxonomy from the following series.

04 – Architecture and Related Services
09 – Communication, Journalism, and Related Programs
11 – Computer and Information Sciences
12 – Personal and Culinary Services
13 – Education
14 – Engineering
Graduates

Qualified Graduates – Allied Programs

Step #1

Investigators selected 228 of the 1,848 instructional programs included in the NCES CIPS taxonomy from the following series.

15 – Engineering Technologies
19 – Family and Consumer Sciences/Human Sciences
22 – Law
26 – Biological and Biomedical Sciences
30 – Multi-/Interdisciplinary Studies
31 – Parks, Recreation, Leisure, and Fitness Studies
Graduates

Qualified Graduates – Allied Programs

Step #1

Investigators selected 228 of the 1,848 instructional programs included in the NCES CIPS taxonomy from the following series.

40 – Physical Sciences
41 – Science Technologies/Technicians
44 – Public Administration and Social Service Professions
45 – Social Sciences
51 – Health Professions and Related Programs
52 – Business, Management, Marketing, and Related
Graduates

Qualified Graduates – Allied Programs

Step #2

For each of the 228 selected instructional programs, investigators estimated the percentage of graduates by degree level that would be expected to have Food, Agriculture, Renewable Natural Resources, or Environmental Expertise.
Graduates

Adjustments – Allied Graduates

Step #3

Bachelor’s Graduates

2% Reduction – Do Not Enter Workforce

25% Reduction – Continue Education

Master’s Graduates

19% Reduction – Continue Education

Doctoral Graduates

30% Reduction – Non-resident Aliens Return Home
Graduates

Allied Graduates - Allocation to Occupational Clusters

Step #4

Graduates in the 228 Allied programs were allocated among the four occupational clusters.

- Management and Business
- Science and Engineering
- Agricultural and Forestry Production
- Education, Communication, and Governmental Services
Graduates

Allocation of “Advertising” Graduates Among Occupational Clusters

Step #4 – Example A

1. Management and Business – 85%
2. Science and Engineering – 5%
3. Agricultural and Forestry Production – 0%
4. Education, Communication, and Governmental Services – 10%
Graduates

Allocation of “Mechanical Engineering” Graduates Among Occupational Clusters

Step #4 – Example B

1. Management and Business – 30%
2. Science and Engineering – 60%
3. Agricultural and Forestry Production – 0%
4. Education, Communication, and Governmental Services – 10%
Graduate Ethnicity – 2012-13

Agriculture and Life Sciences, Forestry and Natural Resources, Veterinary Medicine

- American Indian/Alaska Native 0.66%
- Asian 4.15%
- Black or African American 2.80%
- Hispanic or Latina/Latino 6.20%
- Native Hawaiian/Pacific Islander 0.18%
- White 73.25%
- Two or More Races 1.75%
- Race/Ethnicity Unknown 4.53%
- Nonresident Alien 6.48%

Source: National Center for Education Statistics
Graduate Ethnicity – 2012-13

- American Indian or Alaska Native
- Asian
- Black or African American
- Hispanic or Latina/Latino
- Native Hawaiian or Other Pacific Islander
- White
- Two or more races
- Race/ethnicity unknown
- Nonresident alien
The Big Picture

U. S. - 57,900 Annual Opportunities

- 61% Agriculture Graduates
- 39% Allied Graduates
The Big Picture

- Management and Business: 46%
- Science and Engineering: 27%
- Agricultural and Forestry Production: 15%
- Education, Communication, and Governmental Services: 12%
The Big Picture

- More than five percent growth in food, agriculture, renewable natural resource, and environment occupations is expected during 2015-2020.
- A more competitive market is expected in the next five years. Numbers of qualified graduates are expected to grow more rapidly than job openings.
The Big Picture

• Employers will continue to seek most qualified graduates either from agriculture, or allied disciplines.

• Specific skills and related employment experiences will continue to be most important in hiring decisions.

• Graduates with geographic mobility and a record of leadership experiences will have relatively more employment opportunities.
The Big Picture

Enough graduates will be available to fill job openings during 2015-2020, but employers will continue to find too few fully qualified graduates in some specialties, and too many in others.
Market Factors

• Macroeconomic conditions and retirements.
• Growing numbers of qualified agriculture and allied graduates.
• Consumer preferences for safe and nutritious food.
Market Factors

• Food, agriculture, natural resources, and environment public policy choices.

• Technology advancements in agriculture and renewable natural resources.

• Global market shifts in population, income, food, and energy.
Management and Business

26,700 Annual Opportunities

- 56% Agriculture Graduates
- 44% Allied Graduates
Management and Business

• Most bachelor’s degree graduates will continue to enter sales and technical service jobs.
• New jobs are expected to remain stable or decline in the near term.
• Replacements for retirements will contribute largely to the market.
Management and Business

- Forest ecosystem management job market remains strong.
- New construction contributes to jobs in forest products and landscaping.
- Consumer shifts to fresh and organic products changes marketing strategies.
Management and Business

• Environmental consultants will be in demand to maintain environmental quality and comply with governmental regulations.

• Growing E-commerce will increase opportunities for graduates with online marketing and social media skills.
Science and Engineering

15,500 Annual Opportunities

- 57% Agriculture Graduates
- 43% Allied Graduates
Science and Engineering

- Continued strong demand for food scientists.
- Very strong employment market for plant sciences graduates.
- Water concerns heighten opportunities for water scientists, hydrologists, irrigation engineers.
Science and Engineering

• Continued challenges in meeting food animal veterinarian needs.
• Electronic applications in agriculture project good opportunities for computer specialists.
• More life science B.S. graduates seek health profession opportunities.
Science and Engineering

• Graduates with environmental expertise will exceed job opportunities.
• Oversupply of Animal Science graduates except food animal production jobs.
• Oversupply of Wildlife Science and Management bachelor’s graduates.
Agricultural and Forestry Production

8,500 Annual Opportunities

89% Agriculture Graduates

11% Allied Graduates
Agricultural and Forestry Production

• Higher percentage of openings will require B.S. or higher degree.
• Good opportunities for forest management positions.
• More fresh fruit, vegetable, and organic operations near population centers.
Agricultural and Forestry Production

- Good opportunities for poultry and swine production managers.
- Precision agriculture specialists will see strong employment market.
- Strong job market for certified crop advisors who work with growers.
Agricultural and Forestry Production

- Good opportunities for agricultural management consultants who confirm production standards are met by growers.
- Graduates in animal specialties will continue to outnumber those in crop production and management.
Education, Communication, and Governmental Services

7,200 Annual Opportunities

- Agriculture Graduates: 55%
- Allied Graduates: 45%
Education, Communication, and Governmental Services

• Excellent job market for high school Agricultural Science and Business teachers.

• Good opportunities for naturalists and forest recreation graduates.

• Food safety priorities will maintain strong market for agricultural inspectors.
Education, Communication, and Governmental Services

• Growing community college enrollments will provide market for agricultural and environmental instructors, perhaps part-time.
• Good opportunities - urban foresters.
• Increased public sector jobs in food safety, water management, and environmental quality.
Education, Communication, and Governmental Services

• A major challenge for land-grant agriculture colleges to employ faculty who can prepare B.S. graduates for jobs in management, business, and agricultural production.

• Best opportunities for communication graduates will be in social media and public relations.