

Employment Opportunities for College Graduates in the Food & Agricultural Sciences

***Agriculture,
Forestry & Natural Resources,
Veterinary Medicine***



United States 2000-2005

Employment Opportunities for College Graduates in the Food & Agricultural Sciences, United States, 2000-2005

by

Allan D. Goecker • School of Agriculture • Purdue University

Christopher M. Whatley • Department of Agricultural Economics •
Texas A&M University

Jeffrey L. Gilmore • Cooperative State Research, Education, and
Extension Service • U.S. Department of Agriculture

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You can find out more about the results and the study methodology at:

[**http://facis.tamu.edu/supplydemand/**](http://facis.tamu.edu/supplydemand/)

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The Big Picture

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Results of a 1999 national study indicate good employment opportunities for college graduates with agricultural, forestry and natural resources, and veterinary medicine expertise over the first five years of the 21st century.

Market strength will vary among major employment categories, but slightly more total annual employment opportunities are expected than can be filled by the projected number of new qualified graduates. Some 57,785 average annual openings are projected for U.S. food and agricultural sciences graduates during 2000-2005. An average 57,175 qualified graduates are expected to be available each year.

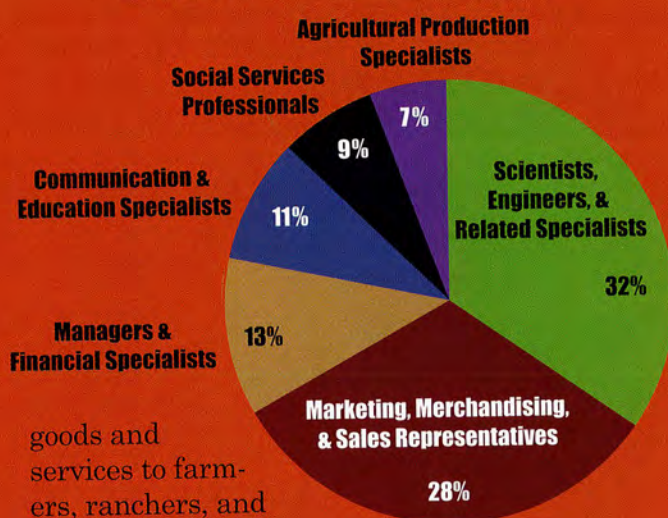
Employment opportunities will continue to increase for those who provide and market an expanding array of food, forest, and veterinary medical consumer products and services to a growing world population. Food scientists and engineers, food and forest products sales representatives, financial managers, information systems specialists, agricultural science and business teachers, landscape horticulturists, veterinary medicine specialists, plant geneticists, and outdoor recreation specialists should see a strong employment market through 2005.

Relatively weaker employment markets are expected for college graduates who provide

goods and services to farmers, ranchers, and forest managers. There will be fewer openings in agricultural and forest production. Also, weaker employment markets are anticipated in government agricultural agencies, veterinary medicine general practices, and in some traditional agricultural science specializations.

Jobs in science, engineering, and related specialties are expected to account for thirty two percent of the total employment opportunities for U.S. college graduates with food, agricultural, natural resources, or veterinary medical expertise.

Expected Annual Employment Positions



Twenty eight percent of the job openings will likely be for marketing, merchandising, and sales representatives. Thirteen percent of the annual openings will be for managers and financial specialists. Communication and education specialists represent eleven percent of the total expected market; social services professionals, nine percent; and agricultural production specialists, seven percent.

Annual Employment Openings & Qualified Graduates



Major Factors Affecting the Market

Four important factors are expected to have major impact upon the employment opportunities for food and agricultural sciences college graduates during the next five years.

The changing business structure of the U.S. food production and delivery system is expected to have the greatest impact. Business consolidations and alliances will continue to redefine the kinds and numbers of needed new graduates. Fewer farmers and ranchers, and fewer agribusiness organizations will decrease opportunities for middle managers, marketing representatives, and others who provide goods and services to agricultural producers. In contrast, more complex business structures will increase opportunities for technical and business consultants, and information technology specialists.

Continued globalization of the food, agricultural, and natural resources system will increase opportunities for graduates who understand the socio-economic factors that define international markets. Graduates who know how to satisfy the diverse consumer needs and preferences in difference cultures, and who have the language skills to communicate effectively, will have the best opportunities to be employed by the growing number of multi-national businesses. Graduates who have studied abroad, or participated in professional work experiences in other countries, will have a distinct advantage in the job market.

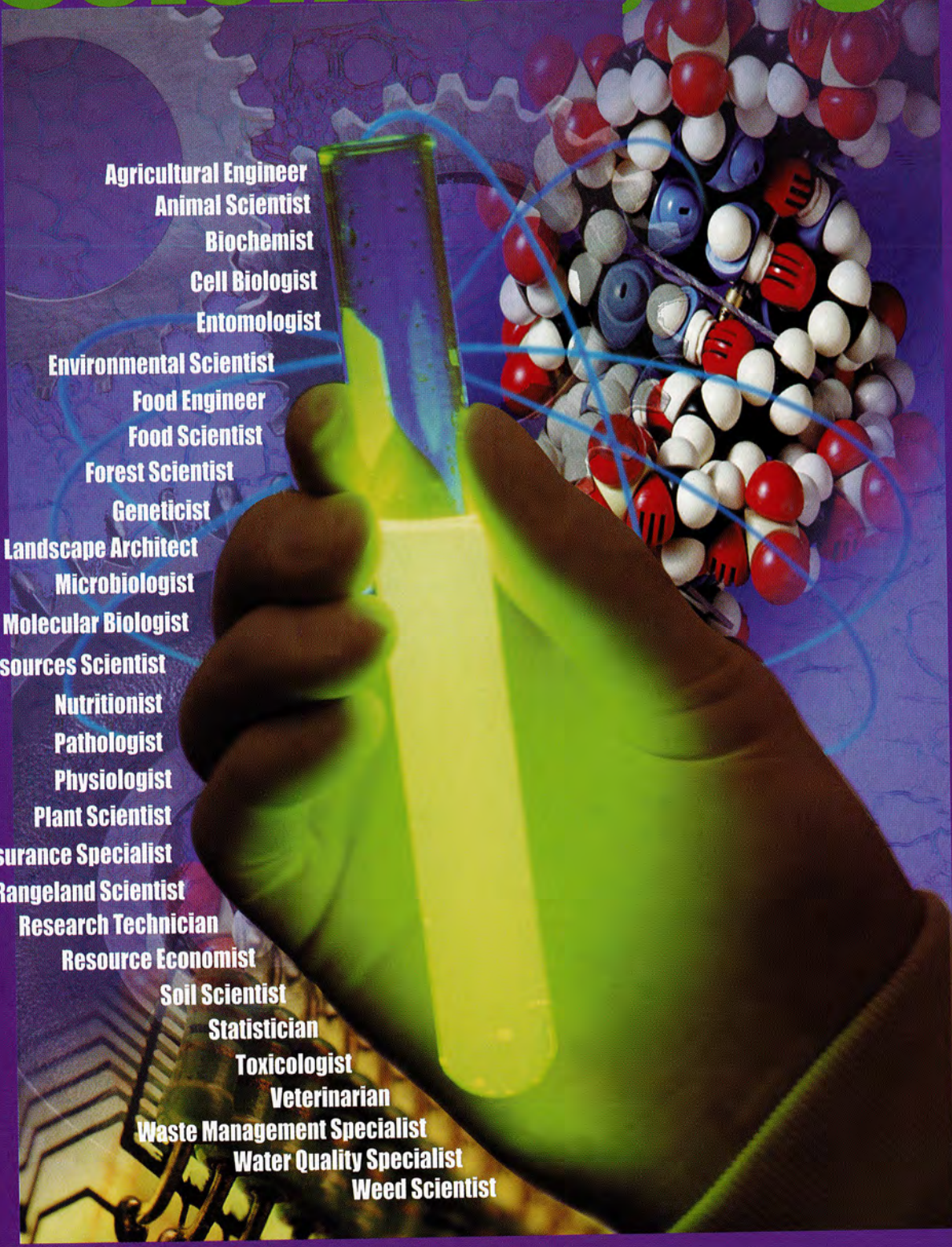
Evolving consumer tastes and preferences will continue to have major impact on employment opportunities for food and agricultural sciences graduates. Fewer businesses will be providing goods and services to agricultural producers, but more will likely be involved in manufacturing products and marketing goods and services to consumers. Strong employment opportunities are projected for such professionals as food scientists, forest product scientists, landscape and turf managers, outdoor recreation specialists, environmental engineers, and specialty doctors of veterinary medicine.

Food, agricultural, and natural resources public policy decisions will continue to have strong impact on the employment market. Public policy choices about food safety, environmental regulations, scientific research, rural development, and land use will influence the kinds of graduates who will be in greatest demand by the private sector. Likewise, public policy decisions will have major influences on the numbers and kinds of food, agricultural, and natural resources professionals needed to staff public agencies.

Scientists, Engineers

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Agricultural Engineer
Animal Scientist
Biochemist
Cell Biologist
Entomologist
Environmental Scientist
Food Engineer
Food Scientist
Forest Scientist
Geneticist
Landscape Architect
Microbiologist
Molecular Biologist
Natural Resources Scientist
Nutritionist
Pathologist
Physiologist
Plant Scientist
Quality Assurance Specialist
Rangeland Scientist
Research Technician
Resource Economist
Soil Scientist
Statistician
Toxicologist
Veterinarian
Waste Management Specialist
Water Quality Specialist
Weed Scientist

ers, & related Specialists

Average annual openings for scientists, engineers, and related specialists in the U.S. food, agricultural, and natural resources system are projected at 18,538 during 2000-2005. This compares to an expected 18,878 qualified graduates each year.

More scientists, engineers, technicians, and related specialists are being employed each year in the U.S. food, agricultural, and natural resources system. However, slightly more than enough qualified graduates are expected during the next five years. This is because numbers of newly

qualified graduates are expected to grow more rapidly than expansion of employment openings.

The strongest employment opportunities are anticipated for food scientists, food process engineers, plant and animal geneticists, water quality specialists, turf scientists, horticultural scientists, plant and animal inspectors, and food and agricultural waste management specialists.

Plenty of qualified graduates are projected in molecular biology, animal nutrition, entomology, agricultural economics, wildlife

science, veterinary medicine general practices, and weed science.

Individuals employed as scientists, engineers, and related specialists must have strong preparation in the basic sciences and their applications to food, agricultural, and natural resources problems. Doctoral degrees are required for individuals who will be managing engineering and scientific research. Supporting engineering, technologist, and technician positions usually require a baccalaureate or higher degree.

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Average Employment Openings & Qualified Graduates



Manager Fin

Insurance Agency Manager
Insurance Risk Manager
Landscape Manager
Policy Analyst
Research & Development Manager
Retail Manager
Wholesale Manager

Accountant
Appraiser
Auditor
Banker
Business Manager
Consultant
Contract Manager
Credit Analyst
Customer Service Manager
Economist
Financial Analyst
Food Service Manager
Government Program Manager
Grants Manager
Human Resource Development Manager

ers & Financial Specialists

Average annual openings for food, agricultural, and natural resources managers and financial specialists are projected to be 7,311 during the next five years. In contrast, some 5,644 qualified graduates are anticipated each year. Especially strong niches of management opportunities are foreseen in computer information systems, food distribution and related services, veterinary medical products marketing, and with businesses and agencies that provide outdoor recreation.

Strong employment markets are expected for personnel managers, golf course managers, and operators of

landscape horticulture enterprises. Also, accountants and financial managers in food, agricultural, and forestry business organizations should continue to fare well during 2000-2005.

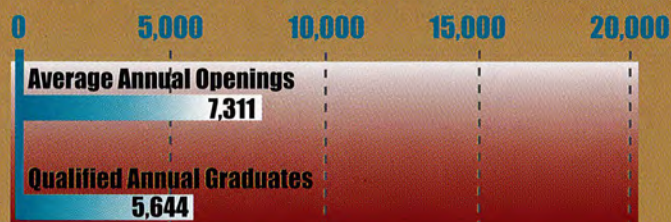
A somewhat weaker employment market is expected for middle managers in agribusiness firms and in credit operations. Continued consolidation of businesses in the food and agricultural economy is expected to exert further downward pressure on the market for managers and other administrative personnel. With fewer farmers, ranchers, and agribusiness organizations in the future, more consolidation

of government agency services is anticipated. These changes will likely reduce management opportunities in agricultural and forestry agencies.

Individuals with strong business, communication, and human relations skills will fare best in obtaining management positions. Nearly one-third of the anticipated jobs for managers and financial specialists will likely be filled by individuals having graduate degrees, especially in marketing and financial specialties.

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Average Employment Openings & Qualified Graduates



United States 2000-2005

Marketing, & Sales



Insurance Agent
Landscape Contractor
Market Analyst
Marketing Manager
Purchasing Manager
Real Estate Broker
Sales Representative
Technical Service Representative

Account Executive
Advertising Manager
Commodity Broker
Consumer Information Manager
Export Sales Manager
Food Broker
Forest Products Merchandiser
Grain Merchandiser

Merchandising, s Representatives

Some 15,946 average annual openings are projected for marketing, merchandising, and sales representatives. In contrast, an average of 14,650 qualified college graduates are expected each year during 2000-2005.

Marketing, merchandising, and sales positions will continue to be a primary employment market for new food and agricultural sciences college graduates. Fewer graduates will be hired to market goods and services to farmers and ranchers. Rather, more will be involved in selling food, forest, and horticultural products to domestic and international consumers. Also, more will utilize emerging electronic

technologies to complete marketing and technical service functions for their businesses.

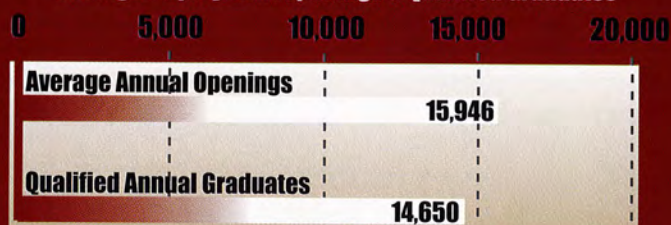
Food company account representatives, landscape horticulture specialists, commodity brokers, forest products merchandisers, international market representatives, and advertising and public relations specialists are expected to have the strongest employment opportunities. At the same time, plenty of qualified graduates are expected to be available to sell feed, seed, fertilizer, agrichemicals, farm machinery, and related products.

Successful individuals in marketing, merchandising, and sales

positions require exceptional communication skills and excellent command of electronic information technologies which are used regularly in business transactions. An increasing percentage of food, agricultural, and natural resources sales and marketing positions will likely be filled by graduates from allied fields rather than from those offered by agricultural sciences and forestry colleges. For example, business school graduates will compete strongly for these positions.

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Average Employment Openings & Qualified Graduates



United States 2000-2005

Comm Edu

College Teacher
Computer Software Designer
Computer Systems Analyst
Conference Manager

High School Teacher

Information Specialist
Information Systems Analyst
Illustrator

Cooperative Extension Agent
Editor
Educational Specialist

Journalist

Personnel Development Specialist
Radio/Television Broadcaster
Training Manager
Public Relations Representative



Communication & Education Specialists

Average annual openings for communication and education specialists are projected to be 6,397 during the next five years. In contrast, some 6,223 qualified graduates are expected to be available each year.

Very strong employment opportunities are projected for computer information specialists, advertising representatives, public relations specialists, secondary school agricultural science and business teachers, and international communication specialists. Communication and education specialists who are highly skilled in providing products and services via the World Wide Web are expected to be in the strongest position to compete for jobs.

Stable, or perhaps declining, employment opportunities are forecast for writers, editors, and newscasters. Little change is expected in the aggregate market for college and university faculty members, post-secondary technical school teachers, and extension services personnel. Each of these professional groups will likely continue to attract more highly educated and specialized applicants during the next five years.

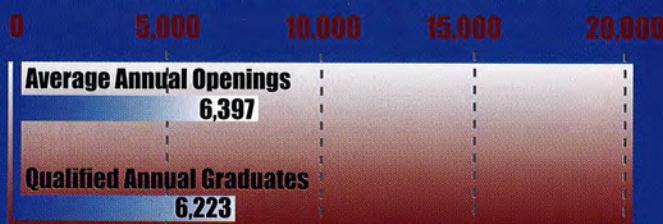
Some 40 percent of the projected jobs for communication and education specialists will be associated with computer information services. Colleges of agriculture, natural resources, and veterinary

medicine are expected to produce 60 percent of the qualified graduates. Others, especially communication specialists, will come from allied academic fields such as computer technology, journalism, and communication.

Graduates with a portfolio of strong communication skills and technical knowledge in a food, agricultural, forestry, or veterinary medicine discipline should enjoy competitive advantages in the market for communication and education specialists.

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Average Employment Openings & Qualified Graduates



Social Serv

Youth Program Director

Food Inspector

Consumer Counselor

Regional Planner

Regulatory Agent

Park Manager

Labor Relations Specialist

Caseworker

Conservation Officer

Dietitian

Rural Sociologist

Community Development Specialist

Peace Corps Representative

Outdoor Recreation Specialist

Career Counselor

Nutrition Counselor

Naturalist

ices Professionals

Some 5,358 average annual openings are projected for social services professionals. In contrast, an average of 6,570 qualified college graduates are anticipated each year during 2000-2005.

Dietitians and nutritionists, outdoor recreation specialists, land use planners, and food inspectors lead the list of social services professionals expected to enjoy a strong job market during the next five years. A somewhat weaker employment market is expected for rural sociologists, labor relations specialists, and government agricultural agency representatives.

Dietitians and nutritionists account for 41 percent of the projected average annual openings for social services professionals. Twenty-seven percent of the openings in this occupational cluster are for recreation workers with forestry and natural resources expertise. Food and nutrition counselors are another important group of social services professionals.

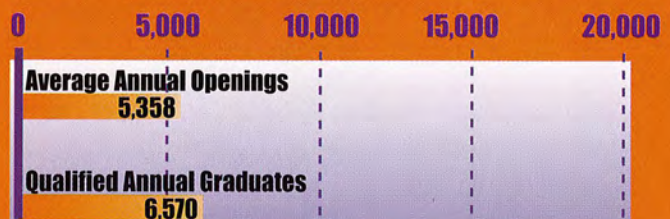
Colleges of agriculture and natural resources are expected to produce about three-fourths of the qualified social services professionals, with the remainder coming from allied academic disciplines such as biology, human

nutrition, sociology, and psychology. About 85 percent of the qualified graduates will have baccalaureate degrees. Some 14 percent are expected to have master's degrees, and one percent will have earned doctoral degrees.

Best qualified graduates will have strong interpersonal communication skills and work experiences that support their technical academic specialties such as nutrition, food science, sociology, or forestry and natural resources.

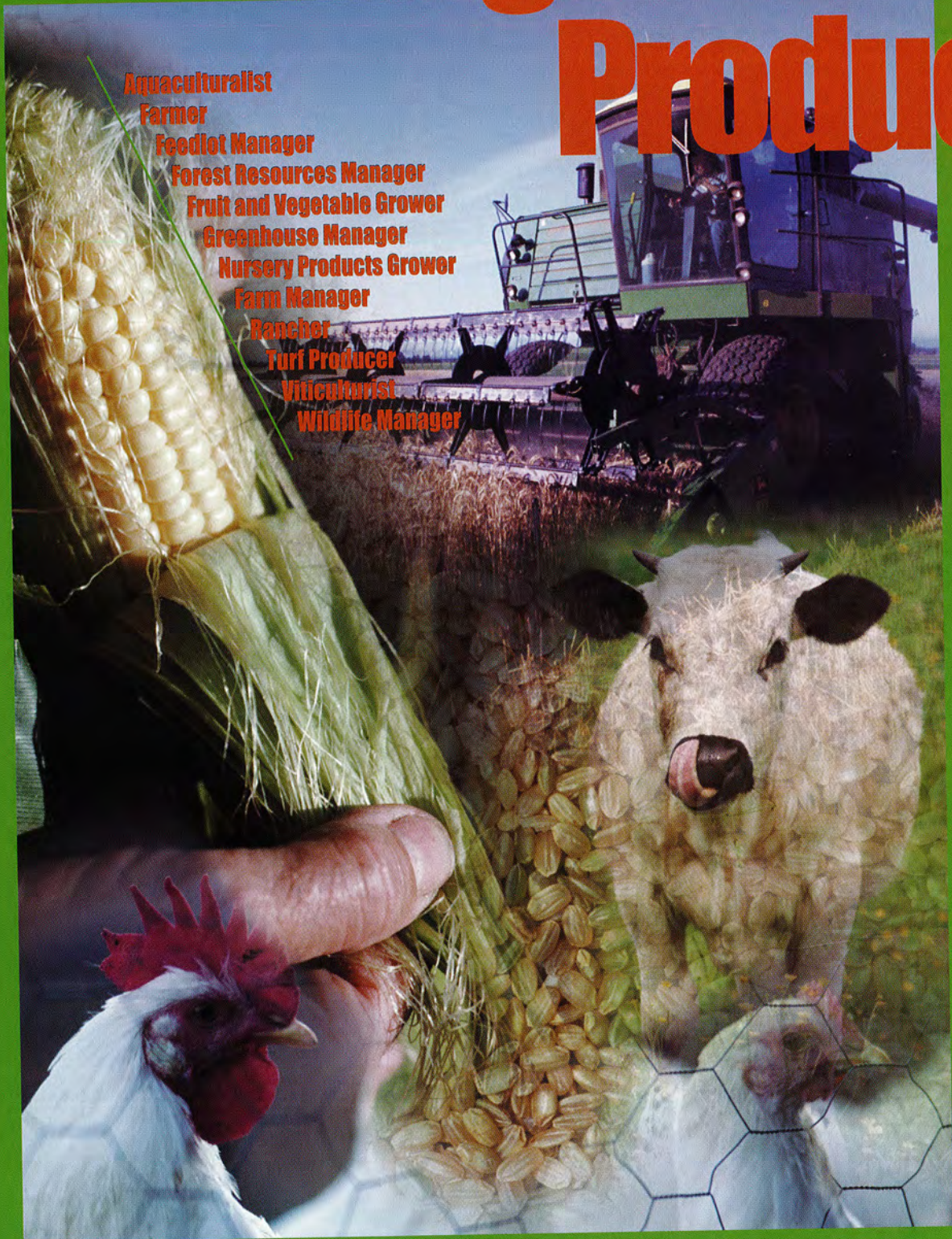
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Average Employment Openings & Qualified Graduates



Agriculture Production

Aquaculturist
Farmer
Feedlot Manager
Forest Resources Manager
Fruit and Vegetable Grower
Greenhouse Manager
Nursery Products Grower
Farm Manager
Rancher
Turf Producer
Viticulturist
Wildlife Manager



on Specialists

Some 4,235 average annual openings are projected for agricultural production specialists with a baccalaureate or higher degree. This compares to an estimated 5,210 qualified graduates each year during 2000-2005. Two thirds of the qualified graduates will be produced by colleges of agriculture and natural resources. The remainder will come from allied fields such as life and physical sciences, and business.

Although farmers, ranchers, and farm managers will account for about 85 percent of new openings in the agricultural production specialists employment cluster, more than enough qualified graduates are expected to be

available in general farming and ranching operations.

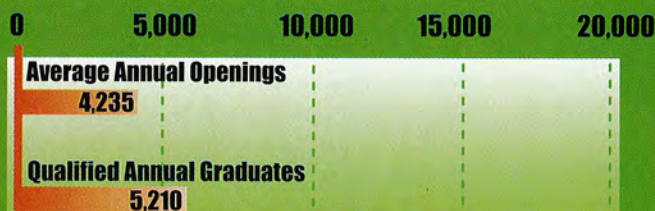
During the next five years, an increasing proportion of new agricultural production managers will be hired or contracted in contrast to being owner operators. Forest managers, horticultural crop producers, landscape nursery operators, and swine and poultry production managers are expected to have good opportunities during the next five years. A relatively stable market is anticipated for new college graduates in dairy and beef cattle operations.

Strong business, communication, and problem-solving skills

are required for graduates in agricultural and forest production positions. Work experiences on farms and ranches are essential for successful entry into farming and ranching positions. All graduates going into agricultural and forest production operations require a comprehensive understanding of the scientific and business principles used in making production management decisions.

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Average Employment Openings & Qualified Graduates



The Bottom Line

Good employment opportunities will be available to college graduates with food, agricultural, and natural resources expertise during 2000-2005. Graduates who add value to raw materials produced on our nation's farms, ranches, and forest lands, and market the products to domestic and international consumers will see expanding employment opportunities. In contrast, plenty of graduates are expected to be available to provide goods and services to the declining number of farmers and ranchers.

- 18** Expanding world population, changing consumer tastes and preferences, evolving business structures, and shrinking natural resources define increasingly complex problems to be solved in the 21st century by college graduates in the food and agricultural sciences. It will not be business as usual. Colleges and universities must continue to strengthen educational programs. Also, much greater efforts will be required to attract sufficient numbers of outstanding students to prepare for very challenging careers in the world's food, agricultural, and natural resources system.

Scientists, Engineers, & Related Specialists



Managers & Financial Specialists



Marketing, Merchandising, & Sales Representatives



Communication & Education Specialists



Social Services Professionals



Agricultural Production Specialists



Acknowledgments

This is the fifth in a series of five-year employment opportunities projections initiated by the U.S. Department of Agriculture in 1980. The basic methodology underlying these studies was developed by Drs. K. Jane Coulter and Marge F. Stanton and has remained essentially the same.

We acknowledge the contributions of many members in several professional organizations in designing the initial methodology and in conducting the ongoing studies. Included are the American Association of State Colleges of Agriculture and Renewable Resources; the Academic Programs Section of the Board on Agriculture of the National Association

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Account Executive Agricultural Engineer Entomologist Biologist Biochemist
Animal Scientist Editor Advertising Manager Accountant College Teacher Retail Manager
Appraiser Commodity Broker Wood Scientist Genealogist Journalist Forest Scientist
Natural Resources Scientist Nutritionist Information Specialist Consumer Information Manager
Landscape Manager Peace Corps Representative Architect Appraiser Grain Merchandiser
Computer Software Designer Food Engineer Auditor Export Sales Manager Conference Manager
Food Broker Molecular Biologist Botanist Microbiologist Wood Scientist Banker
Park Manager Environmental Scientist Cell Biologist Consultant Reporter Pathologist
Forest Products Merchandiser Appraiser Customer Service Manager Illustrator Career Counselor
Entomologist Contract Manager Geneticist Caseworker Research Technician Policy Analyst
Regional Planner Physiologist Insurance Risk Manager Business Manager Editor
High School Teacher Marketing Manager Insurance Agency Manager Animal Scientist Biologist
Computer Systems Analyst Toxicologist Insurance Agent Appraiser Conference Manager
Regional Planner Auditor Financial Analyst Park Manager Economist Peace Corps Representative
Landscape Contractor Veterinarian Regulatory Agent Rural Sociologist Computer Software Designer
Cell Biologist Account Executive Merchandiser Agricultural Engineer Entomologist
Training Manager Consumer Information Specialist Contract Manager Landscape Manager
Food Service Manager Accountant Marketing Manager Nutritionist Teacher Sociologist
Market Analyst Credit Analyst Policy Analyst Purchasing Manager Plant Scientist
Career Counselor Resource Economist Development Specialist Rangeland Scientist Training Manager
Regional Planner Government Program Manager Grants Counselor Cooperative Extension Agent
Toxicologist Banker Business Manager Geneticist Consultant Educational Specialist Auditor
Analyst/Engineer Physiologist Wood Scientist Research and Development Manager Naturalist
Public Relations Representative Information Systems Analyst Sales Representative Stock Broker
Waste Management Specialist Credit Analyst Nutrition Counselor Account Manager Aquaculturist
Statistician Soil Scientist Water Quality Specialist Quality Assurance Specialist Designer Pathologist
Wholesale Manager Consumer Information Specialist Peace Corps Representative Geneticist Soil Scientist
Retail Manager Consultant Outdoor Recreation Specialist Wellman Food Scientist
Technical Service Representative Policy Analyst Human Resources Specialist
Wood Scientist Grants Manager Community Development Specialist Banker Career Counselor
Youth Program Coordinator
Food Inspector
Fruit and Vegetable Grower Farm Manager Food Producer Nursery Products Grower Aquaculturist

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