

CAREERS IN AGRICULTURE

**For Returned
Peace Corps Volunteers (RPCVs)**

2nd Edition

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INTRODUCTION

“I know of no pursuit in which more real and important services can be rendered to any country than by improving agriculture.”

- George Washington

Career opportunities within the field of agriculture include a vast array of employment possibilities and challenges. Whether the Peace Corps was your initial exposure to this field or a continuation of your experience in agriculture, the material in this manual will help provide some answers to the following questions:

- What careers are available in agriculture?
- What is a general job description for each specialty area?
- What past experience do you have that is particularly relevant to the position(s) you are seeking?
- What educational requirements are required to obtain certain positions?
- Who are the employers in this field?
- Where is more information available?

This manual is an overview of some of the diverse occupations in the field of agriculture. Each occupation is listed in alphabetical order. For each occupation, there is a general description of the career field, followed by a few general qualifications needed to get a job. At the end of each description, a summary of employment opportunities in both the public and private sector is provided. The appendices list sources to help you further define and focus your search.

The specific information provided in this guide can be most effectively used in combination with other career materials produced by Returned Volunteer Services (RVS), such as the skills and interests self-assessment-tool in the *Career Resource Manual/RPCV Handbook*, given to you at your Close of Service conference. This manual is especially important since planning for a particular career will be of no value unless you can match that career with your own knowledge, skills, abilities, and interests.

Agriculture is the largest industry in North America, accounting for roughly 16 percent of the United States' Gross Domestic Product and 16 percent of all jobs. As to be expected for such a large industry, the types of work available in this field are diverse, ranging from the traditional family farmer to cutting-edge technological work for an agribusiness firm. Accordingly, job prospects for agriculture vary based on the discipline you pursue.

Professions expected to be in demand over the next decade include food scientists, engineers, landscapers, horticulturalists, aquaculturists, and plant geneticists. Those with a background in science and marketing will also be highly sought after. Thirty-two percent of job openings will be for positions in science, marketing, and related specialties. Marketing and merchandising jobs will also experience growth and account for 28 percent of employment openings, according to the U.S. Department of Labor's

Bureau of Labor Statistics. With increasing attention paid to environmentally safe foods, organic farming and the niche markets for its products will also experience much growth.

As the agricultural industry increasingly moves toward large agribusiness operations, fewer jobs will be available for those working for and with small farmers and ranchers. Again, organic farming belies this trend. Hiring will also be down for agricultural and forest production and veterinary medicine. This trend is exacerbated by shrinking natural resources, technological advances rendering positions obsolete, business mergers, globalization, and changing consumer demand.

RPCVs with aptitude, skills, and agricultural experience will be at a distinct advantage in the employment market. “Employers look for candidates who have real-world experience and people skills—two things that RPCVs possess,” says RPCV Julia Burger (Bulgaria, 1997-99). Also, during these increasingly global times, RPCVs with foreign language skills and experience in multi-national business operations will become increasingly valuable to employers.

Prepare to use the information included here to set up informational interviews and other job-search related activities described in the *Career Resource Manual*. Additionally, personal contacts and recommendations gained through your interviews will produce desired results efficiently and effectively.

While it may be tempting to simply send off résumés to as many of the companies and organizations that seem vaguely related to your future goals, this approach has been proven to be ineffective. In fact, Richard Bolles in *What Color is Your Parachute?* sums up the résumé “numbers game” in this way: “Only one job offer is tendered and accepted in the whole world of work for every 1,477 résumés that are floating around out there.” Bolles adds that the five worst ways to look for work are:

- Using the Internet, with a success rate at a meager four percent
- Mailing unsolicited résumés at random to employers, which has about a seven percent success rate
- Answering ads in trade journals, also a seven percent success rate
- Answering local newspaper ads, with success varying, depending on skill level (for high-paying jobs, it’s about five percent; for others, it’s as high as 24 percent)
- Using employment agencies or search firms

Through field exploration, employer research, and networking, you may discover a need to update your skills to acquire the ideal job. Courses in business, biology, chemistry, communications, and marketing are all valuable for agricultural positions. When making the decision about attending a certain college or university, you should first visit the selected institution. Set up appointments with faculty ahead of time and arrange to attend classes and talk with students. If a visit is not possible, at least consider talking with faculty on the phone. If you lack certain course prerequisites, options such as taking classes through a continuing education program at a local community college can prove to be less expensive, more convenient, and more individualized.

In beginning your search you may want to consider the colleges and universities within the state where you claim residency. The land grant schools are known for great agricultural programs, and residents avoid paying out-of-state tuition. Also, special options for financial aid are often available for in-state students (see the appendices for contact information).

Even though graduate school can be a logical step following the completion of your Peace Corps service, many less traditional options can be as valuable. Therefore, assessing yourself (your Peace Corps experience, your goals, your aspirations, and your career plans) carefully before opting immediately for graduate school is a good idea. In terms of non-traditional approaches to training and education, several areas may be researched. Internships, cooperative education, and apprenticeships may be available in the private sector, within the college or university system, at public and private institutes, and at research centers. Many internships and apprenticeships are listed only in journals and publications of each particular agricultural profession. Therefore, these journals and publications can prove to be one of your most valuable sources of specific information in planning your career path. Also, personal contacts with agriculture professionals can be fruitful in gaining learning experience or employment opportunities. RPCV Bruce White (Lesotho, 1987 and Belize, 1987-89) found his first post-Peace Corps jobs through networking and urges, “Use the RPCV network and the Peace Corps’ consultants manual—it will open doors for you.” Indeed, RPCVs are an excellent resource and those in agricultural professions can be found in the *Career Information Consultants* directory available from RVS. To request a copy, send an e-mail that includes your mailing address to rvs@peacecorps.gov.

DESCRIPTION OF AGRICULTURAL FIELDS

AGRIBUSINESS

Websites

Agribusiness Council
www.agribusinesscouncil.org

International Food and Agribusiness Management Association
www.ifama.org

National Agri-Marketing Association
www.nama.org

Description of Occupation

The fruit and vegetables available to you at your local grocery store are just one example of the work of agribusiness. In fact, most of the aisles in your grocery store display items that were developed by agribusinesses. Agribusiness is the job of processing, transporting, and delivering food to domestic and foreign consumers—and of providing services to the people who raise the food. The food and fiber processing industry includes workers who sell consumer products, feed, seed, fertilizer, equipment, and workers who lend money to farmers and farm processors. About 90 percent of what agribusiness produces comes from non-farm sources and fewer than 10 percent of those working in the industry work on farms.

Many jobs in agribusiness now involve sales and management. Agricultural managers—often working for a large agricultural corporation—guide and assist their companies and/or farmers in maximizing the profit from land or their commodity. These duties include managing production and marketing, hiring, assigning, and supervising workers, determining transportation needs, and overseeing maintenance of property and equipment.

Sales workers may be required to demonstrate the operation of machinery or the use of products. In feed, seed, and grain sales, the salesperson could be called upon to make specific recommendations of practices best suited for the purchaser's operation. In management and sales of farm equipment dealerships, the position can require the ability to assess the trade-in value of used equipment. Management within a store or cooperative may involve taking inventory and managing stock, as well as keeping financial records.

Marketing specialists may work in promotion of new products and development of advertising or educational campaigns. Also, marketing may involve the study of market and consumer trends on the local, regional, national, and international level. For employees in the commodity futures market, work may include the business of advising

individuals or companies about the purchase and sales of futures to hedge their price risk as well as predicting price trends for commodities.

Within the area of trade, work may involve studying and promoting certain macro or micro policies that seek to improve trade conditions and increase trade volume. Promotion of certain commodities on an international basis may include developing and advocating more favorable trade policies. Such promotion means an understanding of the handling and storage requirements and regulations for imported or exported goods.

People in sales and credit operations have frequent contact with the public, sometimes in stressful environments. Working with the public may also be part of a marketing position where a test campaign is being designed. In trade, those who choose to work in inspection of commodities frequently have contact with the public or the shippers.

Sales representatives and loan officers may travel 40 to 60 percent of their time on the job and may also be required to work irregular hours depending on their clientele. Due to increasingly sophisticated technological advances, agribusiness workers are spending more time in offices and at computers, where they electronically manage operations.

Qualifications

Since agribusinesses encompass such a wide variety of positions, it is difficult to list a set of generic qualifications. Nevertheless, many careers in agribusiness require knowledge of agricultural sciences, as well as managerial training skills. Professional management positions within trade or marketing require an advanced degree in agricultural economics, international management, or business along with practical work experience. Knowledge of accounting and a desire to work with figures, formulas, and statistics are helpful qualifications in some areas of this field. It is also important to have the computer skills needed to work with increasingly sophisticated technological systems. Finally, at least a basic knowledge of environmental issues is useful for understanding and negotiating safety, quality, international standards, and government regulations.

Most companies require market researchers to have at least a bachelor's degree in business administration, economics, or marketing. Some employers prefer to hire those with a master's degree for special work in market research, statistics, economics, or computer science. Market researchers should also have or acquire knowledge of the products of the companies for which they conduct surveys.

Marketing requires an inquiring mind and a logical thought process. An interest in people, charisma, and the power to persuade are all assets in this field. Creativity helps market researchers grasp new ideas, patience is necessary to complete long projects, and communication skills are helpful for those in management.

Employment Sector and Prospects

Domestic employment opportunities in this field will be moderate over the next 10 years due to globalization and an increasing number of business mergers. Employment overall is expected to grow more slowly than average according to the federal government's Bureau of Labor Statistics.

Some examples of agribusiness positions in both the public and private sector include agricultural loan officers, commodity analysts, computer specialists, cooperative managers, farm input suppliers, farm or ranch managers, financial analysts, food processing supervisors, international trade specialists, management consultants, market analysts, purchasing agents, sales representatives, trade association executives, and transportation analysts.

Many marketing researchers work in large manufacturing, advertising, data collection, and independent research firms. Farm credit agencies seek loan officers and managers. Brokerages seek individuals competent in trade-related policies and marketing representatives. Cooperatives seek individuals with experience in marketing their particular product(s) and who are familiar with trade possibilities and market expansion suitable to their operation. Equipment dealerships, supply stores, agricultural chemical firms, pharmaceutical, feed, and/or seed companies hire sales representatives and managers. Special interest groups (for profit) seek creative individuals who can devise marketing campaigns and observe market trends. RPCV Bruce White (Lesotho, 1987 and Belize, 1987-89), now working in the field, advises, "It helps to have an advanced degree in economics or agricultural science; it makes you more marketable."

The Extension Service on the state and federal levels offers positions for those with agribusiness and marketing backgrounds. Primarily the Department of Transportation, the Department of Commerce, the Department of Agriculture, and the Economics and Statistics Research Service offer opportunities for those interested in lobbying at the local, state, and federal government levels. The U.S. Agency for International Development also employs agribusiness specialists to promote agricultural development and food security by expanding production, market efficiency, access to markets and trade, and investment in agriculture.

AGRICULTURAL ECONOMICS

Websites

American Agricultural Economics Association
www.aaea.org

Description of Occupation

Have you ever wondered how to place an economic value on preserving an endangered species? Have you questioned whether using the futures market is a profitable way to sell

your crops? Or perhaps you want to determine the profitability of a new alternative crop in your area?

Work in agricultural economics can entail analysis of macro or micro economic policies, the preparation of feasibility studies, and the design and development of credit programs. In general, agricultural economists research and develop models to illustrate and forecast economic patterns and behavior. This includes the forecasting of production and consumption of agricultural products based on research into crops, labor supply, and general economic conditions. The work of agricultural economists relates to farm management, agricultural policy, crop values, farm credit, marketing, and commodity exchanges. Agricultural economists look at the relationship between farm income and food prices, and how farmers' operations affect these figures.

Working conditions of agricultural economists vary according to seniority, individual assignments, as well as employer. Rather than working strictly with figures and statistical information, economists may work with the public as a loan officer or bank representative. In the realm of international agricultural economics, some travel and fieldwork may be part of the job.

In general, agricultural economists spend approximately 60 percent of their time in an office and 40 percent or less of their time in the field. More than likely, the person will work individually at times and with a team at other times. The individual work may involve compiling statistics, producing charts and computer printouts, as well as answering phone calls and other requests. Team work may include traveling to places to gather information. Some agricultural economists may also spend time in conferences and seminars. Except for those positions in credit and appraisal departments, very little public contact is characteristic of this occupation.

Qualifications

A few positions are available to those who have a bachelor's degree that combines technical agricultural courses with business and agricultural economics. Such degrees may be obtained specifically in agricultural economics or an economics degree with agricultural work experience. Most positions require candidates to have completed a relevant master's and have some agricultural work experience. However, entry-level opportunities do exist for those with only a bachelor's degree. For teaching positions at the university level, a Ph.D. is often required along with previous teaching experience.

In general, knowledge of economics and a passion for working with accurate details—numbers, formulas, and statistics—are assets in this field. One should have patience and an ability to concentrate when analyzing complex data. Agricultural economists should also be able to handle multiple tasks and the use of fair judgment when making difficult decisions. They also have to possess excellent communication skills when explaining the results of their work to others. Leadership and persuasion skills, as well as creativity and intellectual curiosity, are important in research positions.

Employment Sector and Prospects

Many agricultural economists work in manufacturing, business, service, securities, investment, and public utilities.

The largest federal employers include the Departments of State, Labor, Agriculture, and Commerce. Public service careers are possible with a federal or state agency such as the Agricultural Stabilization and Conservation Service, the Bureau of Land Management, the Department of Environmental Quality, and the Foreign Agricultural Service of the Department of Agriculture. It is also possible to work for agencies such as the U.S. Agency for International Development. The Extension Service on state and federal levels requires work in analysis of the agency's programs—present and future—as well as research of the economics surrounding local agricultural production systems. Most state governments have departments of agriculture and/or agribusiness councils. You can learn more about these by visiting www.nasda-hq.org.

In the private sector, banks—both domestic and international—offer opportunities within their credit or policy departments. Positions within banking and appraisal institutions offer opportunities for promoting new credit programs, qualifying candidates for loans, executing such loans and appraising farm property and belongings. Insurance companies seek those interested in appraisal or agricultural coverage policy development. Nonprofit organizations offer opportunities in financial analysis and project management as well as macro economic policy research and development. Farm credit agencies may provide positions for those interested in credit and economic analysis of the agency's programs. International careers can be found with foundations, international agencies, or private U.S. businesses.

AGRICULTURAL ENGINEERING

Websites

American Society of Agricultural Engineers
www.asae.org

Description of Occupation

As the name implies, agricultural engineering is just that—the application of engineering skills to the field of agriculture. The nature of the work depends on the sector you pursue.

Agricultural engineers design machinery, equipment, and buildings. They also develop methods for conserving soil and water. To assist farm managers, agricultural engineers develop irrigation and drainage systems, as well as machinery for installing these systems. Agricultural engineers play an important role in improving agricultural production. In the area of design, tasks may include the design of production or assembly plans for agricultural structures, machinery, or other products.

In addition, agricultural engineers may teach at colleges or work as consultants. One third of agricultural engineers supply consultant services to farms and farm industries. In general, they specialize in one of the following areas: farm structures, mechanical power, electrification, soil and water conservation, or food process engineering.

In sales and marketing positions, you can expect frequent travel and exposure to the public. In general, time on the job is often split between the office, drafting table, dealership or shop, and the field. For professors and research assistants, many hours in the laboratory (and classroom) are part of the job.

Qualifications

Education requirements range from a bachelor's degree for marketing and sales for some management positions within the private sector to a Ph.D. for higher-level positions in research and development or management in both the public and private sectors. Since the field of agricultural engineering is undergoing rapid changes in technology, many engineers continue their education throughout their career.

A working knowledge of relevant computer programs, such as those for designing or testing equipment, is essential. Also needed is a positive approach and determination that the problem will be solved. Clear thinking and keen observation skills are critical to success in this field. Agricultural engineers may find farm experience helpful, but in many cases it is not required. In recent years, fewer than one-third of those entering into agricultural engineering had farm experience. More important are interests in math, biology, and the ability to work well with others.

Employment Sector and Prospects

Employment of agricultural engineers is expected to grow 10 to 20 percent through 2010, according to the Department of Labor's Bureau of Labor Statistics. Job opportunities will particularly be available in areas involving conservation and improving production efficiency.

Agricultural engineers may work for major equipment manufacturers. Such positions may be within sales, research and development, marketing, or management divisions. They may also be responsible for customer relations, sales, or serve as project test engineers. Employees of food processing firms may serve as production managers or plant engineers. Agricultural engineers in environmental research may head construction of waste treatment plants or water resources projects, maintain and control environmental systems for greenhouses, or oversee the construction of composting facilities. Agribusiness firms may look for agricultural engineers to work as plant construction supervisors, conservationists, or designers.

Land-grant colleges hire agricultural engineers as professors and department heads. Within the Cooperative State Research, Education, and Extension Service, agricultural

engineers may act as specialists or as consultants on the multi-county, state, or federal level.

AGRICULTURAL EXTENSION

Websites

National Association for Agricultural Educators
www.naae.org

National Association of Extension 4-H Agents
www.fourhcouncil.edu

Description of Occupation

Do you like working with people? Do you have a strong interest in helping others and teaching? If so, then agricultural extension is an excellent way to combine those interests with agricultural work. Many agricultural education and extension skills are the same as those required in other educational fields. Several subdivisions of agricultural extension exist. These include instructor, historian, anthropologist, cooperative service agent, and home economist.

As an instructor, you may develop curriculum, design lesson plans, and prepare seminar or workshop schedules. Furthermore, classroom or field demonstrations or illustrations of the subject being described are often required. For these demonstrations or illustrations, the instructor may be called upon to design and supervise the construction of visual aids. The execution of these field trials also demonstrates to producers the benefits of a new practice. As a part of community development, extensionists carry out social surveys to measure and evaluate the impact of new methods or solutions introduced into the community (or to note the incidence of a particular problem).

Recently, agricultural historians and anthropologists have become an integral part of the extension team. For example, the study of the evolution of agricultural methods and equipment can also assist extensionists in finding solutions to future problems. Also, different traditional agricultural communities provide sources of information on those methods that have or have not remained sustainable. Those in extension use the principle of cultural variation and change to make people aware that conditions that they view as inevitable can be thought of as problems with solutions.

Working conditions for some extensionists may involve long or irregular hours with evening classes for people who work during the day. A flexible schedule is a particular part of the routine in agricultural extension. About 60 percent of the extensionist's work is outdoors, conducting field trips, demonstrations, or farm visits. Home economists, for example, work in the home of families, at group sessions, shopping malls, radio or TV stations, or other public places. County agents visit farms, conduct tours and field

meetings, and help set up displays at fairs. They spend about half of their time in the field. At other times, cooperative extension service agents work in offices.

Extensionists must accept varied responsibilities and must be able to follow up, establish, and maintain relationships to provide guidance and placement to students. However, due to a decreased number of openings in this field, they must also be willing to relocate, work in a small community, or in a rural setting. Extensionists are expected to work as a team and be constantly available to the public. Additionally, cooperative extension agents may be out in all kinds of weather, and may work alone or with other agents and program assistants.

Qualifications

Positions within agricultural extension often require a teacher certification. Many positions in agriculture, education, or extension also require a master's degree or at least enrollment in such a program and a scientific background. For federal, state, multi-county, and specialist positions within the land grant university system, an advanced degree such as a Ph.D. is required. Practical "hands-on" field experience in a chosen specialty (such as soil science, animal science, or agronomy) is assumed to qualify candidates for employment positions, even if not required for the degree program.

However, don't be discouraged by the advanced degree qualifications cited above. Some positions in this field may only require a bachelor's degree (in general, agriculture, animal science, agronomy, soil science, and agricultural education). "From my experience, there are different levels in the extension system," says RPCV Adam Michaelides (Malawi, 1996-98). "Federal and state positions do require an advanced degree; however, many of the positions at the county level are that of program managers. Requirements for these positions include a bachelor's degree in a related field (usually the sciences) and adequate experience."

In addition to program managers, significant possibilities exist at the county level as office personnel and teachers' assistants, he adds. These positions generally require a bachelor's in a related field and adequate experience and are an excellent means for getting one's foot in the door.

At least two years of appropriate employment experience is required for extension positions. Such experience does not have to be farm experience for those who plan to work in urban areas where, for example, skills in ornamental horticulture as well as an understanding of working conditions and employment needs are more applicable. In rural areas, an understanding of rural life and a practical knowledge of agricultural production is necessary as well as an ability to prepare people with a rural background for off-farm employment requiring skills in agriculture.

In general, extension positions require certain leadership skills, such as a faith in the importance of the work being done, a larger vision of the work to be accomplished, and a certain determination to see projects through to completion. Strong communication skills

in speaking and writing as well as interpersonal skills for relating to co-workers and students are used daily by all in this field. Also, a keen eye for identifying needs or problems is especially useful in extension, since this work involves community development.

Tact, patience, and discretion are important as well as the ability to persuade people to use new ideas and information. Those planning a career in extension work should be able to organize people and projects.

Employment Sector and Prospects

Employment for extensionists will increase slowly, according to the Bureau of Labor Statistics. Many cooperative extension agents work in federal, state, and county governments. Their work is part of a joint effort between the Department of Agriculture, state land grant universities, counties and cities, high school departments of vocational agriculture, vocational and technical colleges, and the Cooperative State Research, Education, and Extension Service. The majority of extension agents are employed at the county level because the extension offices are in a county seat.

Some companies may employ instructors to keep their employees, especially sales staff, updated on technological innovations. Nevertheless, relatively few opportunities exist in the private sector.

AGRICULTURAL SCIENCE AND RESEARCH

Websites

Agricultural Research Service
www.ars.usda.gov

Description of Occupation

Agricultural scientists study farm crops and animals, and develop ways of improving their quantity and quality. They look for ways to improve crop yield with less labor, control pests and weeds more safely and effectively, and conserve soil and water. They research methods of converting raw agricultural commodities into attractive and healthy food products for consumers. Researchers may investigate and analyze fundamental principles and methods or work with applied research where specific studies relate to practical problems in agriculture, such as production and economic returns or efficiency and sustainability. Increasingly, new technologies such as Geographic Information Systems (GIS) are being adapted for the purposes of research. GIS involves interactive computerized maps to store, produce, and analyze data and is helpful in areas such as soil science, where it examines the effects of weather on crop yields.

This field incorporates individuals who specialize in any one or more of the agricultural fields, such as biotechnology, seed science, soil science, plant physiology, pest

management, agricultural and food science. A description of each of those disciplines is in the manual in alphabetical sequence.

AGROMETEOROLOGY

Websites

American Meteorological Society
www.ametsoc.org

Description of Occupation

Agrometeorology is the study and use of weather and climate information to enhance or expand agricultural crops and crop production. This field is considered a horizontal science since the theories and applications of several physical, biological, and applied agricultural sciences are incorporated into one. In general, an agrometeorologist investigates the responses of living organisms to the physical environment. In this case, the physical environment refers to the air, soil, water, plants, animals, microbes, and foreign matter and the living organisms refer to cultivated plants, livestock and domestic fowl, insects, and microorganisms of economic importance.

Ultimately, the data gathered by an agrometeorologist is applied to improve agricultural production by more accurately forecasting and controlling the physical environment. The process helps develop a healthier agricultural industry. For example, forecasting may include predictions of crop yield and quality and estimations of climatic hazards such as drought. By forecasting these conditions, changes may be made to control the physical environment to prevent frost, to control flooding, or to regulate the temperatures inside animal shelters.

Other applications of meteorological techniques to field operations include studying the effects of forest fires, scheduling planting and harvesting dates, controlling insects by analyzing or forecasting the climatic conditions for outbreaks, studying the weather factors that affect the spread of plant disease, providing information on soil water and soil erosion to conservation practices, and identifying other micro-climatic modifications, such as using wind shelters to control conditions in a given area.

Agrometeorology covers topics that could be further classified under agroclimatology, instrumentation, crop forecasting, and many others. More specifically, agrometeorologists may work as team members in research, extension, radio broadcasting, and agribusiness, or individually as college instructors. Researchers may work designing, studying and applying computer program models to simulate different conditions in the physical environment. Also, research assistants and technicians are often required to take readings from equipment, set up and adjust instruments, and develop new procedures for recording and analyzing data. Within some private voluntary organizations, agrometeorologists may also be called upon to assist in writing proposals for grants.

Particularly in entry-level positions, the majority of working hours will be spent outdoors monitoring instruments. Since this field is multi-disciplinary, agrometeorologists will often be involved in a team with other scientists, technicians, and communications and public relations professionals. Broadcasting and extension development workers tend to have frequent public contact.

Qualifications

This field requires a multi-disciplinary or a meteorological degree with additional course work in agriculture, physics, and mathematics. In general, the minimum requirement for positions in the federal government include a bachelor's of science degree, 20 hours of meteorology credits, and courses in physics and math. Technician positions in this field will only require a bachelor's degree, while most other professional positions require an advanced degree.

Individuals should have experience and interest in environmental work when involved with agriculture. Agrometeorologists should have the ability to analyze large amounts of data to identify trends and patterns. In some positions, one must also have the ability to make weather predictions. Mathematical ability is also useful for dealing with the statistical part of the field.

Employment Sector and Prospects

In the public sector, many agrometeorologists work with the National Oceanic and Atmospheric Administration. At the local level, the Department of Agriculture and the Cooperative State Research, Education, and Extension Service may offer opportunities for agrometeorologists. When considering a career in international agriculture, consult the U.S. Agency for International Development, the Department of State, and the Department of Agriculture.

A very small field exists for those interested in teaching in this field, and generally, opportunities are only at the university level. Universities and colleges also offer positions for qualified researchers.

Further opportunities in research exist in various development agencies or in private organizations, such as the National Geographic Society. Radio and television stations also may offer some openings for agrometeorologists, especially in the rural areas of the United States. In the continuing drive for awareness in protecting the environment, and as the value of agrometeorologists becomes more apparent, opportunities within the private sector can be expected to grow.

AGRONOMY

Websites

American Society of Agronomy
www.agronomy.org

Description of Occupation

Agronomy involves working with field crops and soil management. Agronomists gather information on subjects such as tillage and traction or crop rotation and provide technical knowledge on management or conservation practices.

In general, agronomy encompasses all topics related to crop production and plant husbandry. Like other fields, agronomy includes research and development in areas such as crop genetics. Agronomists observe, analyze, and make recommendations on the production of field crops, such as cereals, forages, and grasses for animal feed or turf production. Consultants with a background in agronomy can assist farm operators or managers with crop diversification programs. An agronomist can make recommendations in regard to a crop's diet depending on the nutrients available to the plant. Agronomists work together with entomologists and plant pathologists to study and manage pests and diseases that attack the crops.

Many agronomists will split their time between outdoor fieldwork and indoor research. Some head researchers will spend more time in the laboratory than in the field. Often, laboratory work requires cooperation with other professionals in agronomy as well as other agricultural disciplines such as entomology or animal science. Individuals that work within extension type positions will have frequent contact with the public and may travel for field visits. Those working in the production of field crops and turf production will spend almost their entire time outdoors.

Qualifications

For almost all jobs, the job seeker should have at least a bachelor's degree with a firm background in biology. A few entry-level positions will require only a bachelor's degree. To be more competitive, however, a master's degree is usually recommended. In teaching, research and development, and agricultural extension services, a Ph.D. or other advanced degree should be sought. Further study may consist of a soil science or a crop science specialty.

Creativity and problem solving are assets to developing effective research and extension programs in agronomy. Agronomists must be able to work well with people as well as being able to work alone in an alert, observant, and intelligent manner. Those in fieldwork may need physical stamina. Agronomists should have an interest in nature and the environment and perseverance to complete research. Strong writing skills will help them explain issues and clearly express their findings.

Employment Sector and Prospects

While employment opportunities are expected to grow slowly in this field, certain sectors will belie that trend. Researchers will be needed to develop alternatives to the increasing number of diseases and insects resistant to pesticides. At the same time, agricultural scientists will be needed to research means of developing plants and crops that require less fertilizer, fewer pesticides and herbicides, and even less water for growth. The use of such fertilizers and pesticides has also taken its toll on the environments, and agronomists will be needed to work on ways of preserving soil, water and ecosystems.

In the public sector, many agronomists work for the federal government with the Department of Agriculture. The USDA Agricultural Research Service offers positions in research and fieldwork to individuals with backgrounds in agronomy and soil science. The Agricultural Stabilization and Conservation Service and the Natural Resources Conservation Service also offer opportunities for agronomists. Many agronomists work in city governments where they oversee projects such as parks and recreation, beautification, zoning, construction, land-use planning, turf management, and highway landscaping.

In the private sector, some work is available with service companies and public relations firms that deal with agronomy. Agricultural extension agents and sales people work with agribusiness and industrial firms at their headquarters or in field stations. Agronomists also teach in colleges and land-grant universities. Agribusinesses with agricultural chemical and seed product lines offer opportunities in research, marketing, management, and fieldwork.

ANIMAL HUSBANDRY AND VETERINARY SCIENCE

Websites

American Veterinary Medical Association
www.avma.org

Description of Occupation

Animal husbandry includes the management of a commercial livestock operation or raising purebred animals. For example, in horse husbandry, individuals train horses for riding, hunting, racing, or draft power. Farriers specialize in the shoeing of horses. Veterinary science includes the prevention, diagnosis, and treatment of animal diseases and disabilities. They work with all manner of animals, from pets to livestock to zoo and aquarium animals.

Many of these positions in animal husbandry or veterinary science require a degree of physical strength and may be hazardous in terms of animal behavior and the machinery used. Fieldwork is an integral part of most positions, except in situations where the animals are raised in confinement. A natural understanding for animals and animal

psychology is needed. In extension and veterinary medicine, individuals spend large blocks of time working with the public. In certain cases, those in these fields are called upon to work with other professionals in their field or other agricultural disciplines.

Veterinarians are also involved with research on human and animal health problems, such as protecting humans against diseases carried by animals. Some determine the effects of drug therapies, antibiotics, or new surgical techniques by testing them on animals. Some veterinarians are involved in food safety at various levels.

Veterinarians also work as livestock inspectors, checking animals for transmissible diseases, advising owners on treatment, and quarantining animals if necessary. Veterinarian product inspectors examine slaughtering and processing plants, check live animals and carcasses for disease, and enforce government regulations regarding food purity and sanitation.

However, most veterinarians work in clinical private practices directly caring for animals. Over half of those in private practice work primarily with small animals, such as pets. A smaller number of private practice veterinarians work with large animals, primarily food animals, such as cows. One viable alternative to working as a full-fledged vet is to work as a veterinary assistant.

Veterinary work involves long, irregular hours and can frequently require much time on the road caring for animals in the field or responding to emergencies. For those working in the non-clinical research side, veterinary work is conducted in laboratories and offices and interaction is mostly with people rather than animals.

Qualifications

For many positions in animal husbandry, a bachelor's degree is sufficient. Some positions, such as a blacksmith may not require a bachelor's degree but will require other specialized training such as apprenticeships. Experiential learning is quite valuable for most positions within this field, often as much as formal education. Analytical skills and creative thinking are also important.

For veterinary medicine positions, a doctorate in veterinary medicine is required. Most entrants into veterinary school have four or more years of college prior to their graduate study. To be a veterinarian, you need at least seven years of education beyond high school. This includes four years of study from an accredited college of veterinary medicine leading to the Doctor of Veterinary Medicine degree. Veterinarians also need a license to practice. Admission to veterinary school is not easy and only a third of the applicants are accepted. Course work in the sciences, test scores, and work experience with animals are all important factors in the admissions process. Veterinarians should like and understand animals and science. Veterinarians should have the ability to work well with others and be able to communicate with the general public. Those who plan to set up a private practice also need to have good management and business skills and be able to handle sophisticated laboratory equipment.

Employment Sector and Prospects

Job prospects for veterinarians are strong for those caring for a small-companion animals, such as cats and dogs. For those caring for large-food animals, such as cows, employment is expected to be less robust. However, large-animal veterinarians willing to work in rural, isolated areas will be at a distinct advantage in the job market. About 80 percent of all veterinarians are in private practice. Those in animal husbandry may have opportunities in the private sector working for commercial, large-scale operations. The federal government employs many veterinarians, of which some are in the military. Opportunities exist for researchers and technicians within the university land grant system as well as in the Agricultural Research Service. Particularly in the realm of veterinary science, many opportunities exist with the Department of Agriculture.

ANIMAL SCIENCE

Websites

American Society of Animal Science

www.asas.org

Description of Occupation

Animal scientists work to ensure efficient ways of processing poultry, dairy, and meat products. Individuals also serve as consultants on the care and management of livestock, horses, or fowl. A large industry has grown around the artificial insemination of animals as well as other reproductive innovations such as embryo transfer. Within the animal reproduction industry, individuals are needed as breeders, lab technicians, packers, and processors of animal products, sales representatives, and personnel managers. Other positions involve the marketing of animals or animal products.

Animal scientists work in research stations, offices, livestock ranches, or in stock yards and feedlots. Many belong to firms that deal in feeds, pesticides, animal health products, and farm equipment and supplies. Some animal scientists spend a portion of their time in the field. They also may study animals by conducting tests and analyzing the results.

Qualifications

Animal scientists should have at least a bachelor's degree, preferably in animal science, dairy science, poultry science, or a similar major. Those who plan to do research, teach in a university, or fill administrative positions must have a Ph.D.

Animal scientists should have a talent for science and the patience to work with details and solve problems. Accuracy, curiosity, and perseverance are vital, as are systematic work habits. Also helpful is the ability to use logic and make decisions. Communications skills, both spoken and written, are essential.

Employment Sector and Prospects

Animal scientists with a bachelor's degree may work in public or private firms. They may serve as testing or inspecting technicians, as technical sales or service representatives, or as managers of animal production plants. Those with a master's degree may focus on practical applications of the findings of basic research to specific agricultural problems.

In the public sector, animal scientists may work for the Public Health Service, the Animal and Plant Health Inspection Service, the Department of Agriculture, the National Institute for Health, or the Federal Drug Administration. Animal scientists with a doctoral degree may teach college agricultural or biological science courses or conduct research with animals.

In the private sector there are many firms that sell feed, farm equipment, chemicals, and biological products. Many of these firms do service work, analyze feed samples, and provide training for farmers and veterinarians.

BIOTECHNOLOGY

Websites

National Center for Biotechnology Information
www.ncbi.nlm.nih.gov

Description of Occupation

Biotechnology seeks to solve such problems as raising crops in hot and cold extremes or in “salty” soil. Furthermore, work is being performed to develop crops that ultimately produce their own fertilizer, natural insecticides, and herbicides. In animal science, studies are also carried out in tissue culture and genetics. In animal nutrition, biotechnologists seek to develop new products that are appealing to consumers. For example, the artificial sweetener known as Nutrasweet was developed through biotechnology, using amino acids and proteins.

Many biotechnologists work in labs and at computer terminals. Most work as part of a research team. As a rule, the higher the position, the less time spent in laboratory work, and the more time spent in administrative or supervisory work.

While some agricultural research positions will involve fieldwork, many positions in research, and most in biotechnology, require long hours in the laboratory rather than outdoors. In some research or biotechnological work, individuals are required to handle hazardous chemicals.

Qualifications

In general, individuals in this field should enjoy working with statistics and analytical

procedures for studying data and information collected from research. Research positions require a certain amount of creativity and initiative in designing studies and new scientific procedures for investigating certain phenomena. Agricultural researchers are generally required to participate in writing proposals for grants, and therefore sharp verbal skills for writing papers and making presentations are necessary. Laboratory technicians working with delicate procedures should possess manual dexterity and patience. Except for technician positions, most agricultural and biotechnology research staff members hold Ph.D.s in a particular specialization.

Engineers and technicians are needed to analyze production methods, and design, install, operate, and maintain equipment, such as fermentation tanks, mixing vats, and other batch production facilities.

The rapid development of new biotechniques requires biotechnologists to continue their studies and training throughout their careers.

Employment Sector and Prospects

As plants and insects continue to adapt to pesticides and fertilizers, researchers will be needed to develop alternatives. There are about 1,000 firms conducting biotechnology research in the United States. Both large and small companies, such as pharmaceutical firms, operate nationwide. Many are allied with research foundations and departments in major universities.

In the public sector, the Department of Agriculture employs many scientists and technicians in all agricultural fields. Other agencies, such as the Bureau of Land Management, employ scientists in specific fields, such as rangeland management and agronomy. In general, to find out more about these specific research opportunities, review the references and professional organizations under the particular agricultural field of interest. The land grant universities also have a few openings for agricultural scientists in traditional fields and biotechnology.

In the private sector, many large chemical, pharmaceutical and food related companies devote part of their operations to biotechnology. Many firms, both large and small, continue to turn towards biotechnology to keep up with the latest developments.

COMMUNICATIONS AND INFORMATION SCIENCE

Websites

American Agricultural Editor's Association
www.ageditors.com

American Library Association
www.ala.org

Description of Occupation

While many agricultural fields focus on working with people, animals, or tools, this profession requires that the employee also spend blocks of time indoors managing information. Some positions in the agriculture communications field include library science, publications management, writing, television production and broadcasting.

In addition to the production side of publications, people may also work in library services cataloging and supervising (or managing) collections of agriculturally related works at places, such as the National Agricultural Library or at land grant universities. However, this field has limited job openings.

Other professionals may manage publication clearing houses. Within any given agricultural information center, many positions exist. For example, an abstractor-indexer processes the content of documents into a format that lends itself to convenient retrieval, while a bibliographic searcher uses computerized information systems and databases to identify or retrieve pertinent publications. A database manager analyzes, manipulates, and coordinates facts and information to be used by researchers or field and management personnel.

Internationally and domestically, agricultural journalists may be responsible for writing or editing scientific research results for publication. Publication and illustration may involve some agricultural communications specialists in the area of graphic design. In terms of illustrating articles, reports, and books, agricultural photography is another possibility.

Others may be involved in recording interviews and special reports or in motion pictures, filming, directing, and producing public service or commercial film clips. For example, media specialists use non-print technology to expedite the flow of information.

Working in this field requires being informed and interacting with people by attending conventions, demonstrations, and legislative sessions. Exposure to the public as well as the need to work as a team member, varies from position to position. Farmers rely on agricultural radio personalities to provide accurate and up-to-date market information.

For broadcasters, work may require irregular working hours to coincide with the hours farm managers and operators keep. Writing, editing, and illustration all require a strong creative sense. For some writers, illustrators, and broadcasters, time may be split between the office and the field. In other positions where the primary task is the management of information, almost all the time on the job may be spent in the office.

Qualifications

A minimum of a bachelor's degree that combines agriculture and communications work (broadcasting, journalism, or mass media) is required for some openings, such as radio broadcasters and writers. Since writing is at the core of broadcast journalism, it should be

the focus of education for this career. Positions in international work and editing frequently require an advanced degree. Most positions within the public relations and information branch of agricultural universities require a master's degree or Ph.D.

For information science, a master's of library science (MLS) degree is usually required. This degree can lead to work cataloguing, referencing, and indexing agricultural materials.

Positive rapport with people is essential as in any communications field. Furthermore, leadership and persuasive ability can contribute to your success in public relations where experience is often as important as education.

Certainly, an ability to work with people is an asset and communicating information requires a means of addressing the audience, whether that information is reporting on the farm situation over the radio, on television, writing scripts for farm reports, or delivering talks to groups of farmers.

Employment Sector and Prospects

There are hundreds of media markets in the United States. Most cities have independent, public, local, and regional cable TV operations that air news and public affairs programs. In addition, most communities have daily and/or weekly newspapers. However, competition is keen for positions in this field and the pay—particularly at the entry-level—is quite low. Employment prospects are more likely to be found in rural and isolated areas.

In the public sector, all federal agencies employ writers, editors, and information managers to create, manage, and disseminate information. For example, the National Agricultural Library offers a few openings for those in the information sciences. Within the Department of Agriculture's Agricultural Research Service, writers and editors are required for publishing scientific reports.

In the private sector, radio and television stations may employ broadcasters or others for talk shows or special programs. A few writers have steady jobs in writing regular feature articles for magazines and columns for newspapers. Commercial radio, and on rare occasion commercial television stations, employ agricultural journalists or public relations specialists for broadcasting programs.

Popular magazines and technical publications employ staff to write, edit, and illustrate articles. Advertising firms, marketing agencies, and special interests groups employ agricultural public relations specialists. International technical assistance organizations also offer positions to those qualified to write or edit scientific reports or grant proposals.

ENTOMOLOGY

Websites

American Entomological Society
www.acnatsci.org

Entomological Society of America
www.entsoc.org

Description of Occupation

Entomology involves the study of insect populations and their life cycles. Entomologists work in a variety of jobs including teaching, working as extension entomologists, raising bees, enforcing quarantines and regulations, doing insect survey work, consulting on integrated pest management topics, selling insecticides, controlling pests, and conducting research on insect classification, taxonomy, biology, ecology, behavior, or control. Entomologists also work to control insects that carry diseases. These insects cause epidemics by transmitting infectious organisms to animals and humans. Some entomologists develop software to predict pest outbreaks or other activity before it happens. This information is useful to farmers, foresters, and the general public. Entomologists also write papers for professional journals or popular magazines.

In addition, entomologists may work in insect production. These insects can be utilized on a commercial scale within integrated pest management programs, gardening programs, or simply for bait. A limited number of scientists work in forensic entomology, using insect evidence to help solve crimes.

Working conditions in the field of entomology vary. Some spend a majority of their time in research laboratories, conducting controlled experiments. At times they may handle poisonous insects or toxic chemicals. They study insects under microscopes or use special equipment to evaluate life processes. They also supervise research studies. Other entomologists work outdoors, collecting insects in the field or in remote jungles.

Qualifications

A bachelor's degree is the minimum requirement for entomologists. With this degree, they can work in some testing positions, become food product inspectors, or serve in sales or services jobs. However, the majority of entomologists have a master's or doctoral degree. A Ph.D. helps ensure advancement and the opportunity to do select research and obtain management positions. For specialist positions, within the Cooperative State Research, Education, and Extension Service, a master's or Ph.D. will be required.

Experiential learning is quite valuable for most positions in these fields. Manual dexterity and a keen interest in insect life benefit anyone seeking a career in this profession. An ability to recognize the economic feasibility and profitability of certain activities and

innovations can be useful skills, whether aspiring to manage an apiary or to work in research. Entomologists must be adaptable to all kinds of people and working conditions. Like other scientists, they must have patience and perseverance to undertake and complete both research and economic projects. Entomologists should be able to work well both independently and as part of a team. They should be able to communicate clearly both in speaking and in writing. Those in fieldwork should be able to withstand the rugged outdoor conditions.

Employment Sector and Prospects

About one-third of all entomologists work for the government in a variety of agencies. Health agencies, agricultural experimental stations, plant inspection agencies, mosquito control boards, and conservation agencies also employ entomologists. In the Cooperative State Research, Education, and Extension Service, a limited number of positions are available to specialists on the regional, state, or federal levels.

Major chemical companies employ entomologists skilled in toxicology and insect control. Entomologists work in agricultural research stations, research farms, offices and labs. Entomologists also work for companies that make insecticides, or pest control products for fertilizer firms and seed companies. Commercial industries require managers for apiaries and other insect production farms. Also, positions for inspectors, researchers, and technicians who work in quality control are available with packing and marketing companies. Pathologists are employed to prevent and eliminate disease problems.

FARM MANAGEMENT AND AQUACULTURE

Websites

American Society of Farm Managers and Rural Appraisers

www.asfmra.org

National Aquaculture Association

www.natlaquaculture.org

Description of Occupation

Farm management overlaps in many areas with agribusiness, since managing a farm is identical in numerous ways to managing any business. Furthermore, farm management requires an increasing knowledge and awareness of agricultural technology. Basically, farm management includes organizational decisions about what crops to produce, what livestock to raise, how much to produce, and when to produce it. In combination with these organizational decisions, a manager takes responsibility for operational tasks such as determining methods of production, timing, and selecting equipment or techniques.

With crops, more specific decisions involve tilling the land, planting, fertilizing, cultivating, and harvesting. With livestock, management includes planning and implementing health, nutrition, and production programs. In addition to managing the

physical resources of the farm, the manager is also responsible for the human component in training and supervising the workers.

There is also a “surf” component to what many think of as a strictly “turf” field—aquaculture. Aquaculture farmers raise fish and shellfish. They stock, feed, protect, and otherwise manage aquatic life sold for consumption or used for recreational fishing. Individuals in this field also often work closely with soil scientists and conservationists

In general, farm management activities can be divided into four categories: technical, commercial, financial, and accounting. Technical activities involve decisions revolving around the type of enterprise, the level or combinations of inputs, the quality of outputs, the use of the land, the degree of mechanization, and the scale of production.

Within the commercial aspects of farming, the manager or farm operator decides the required inputs needed for production, the avenue to be used for marketing the product, and the logistical support needed to meet delivery and quality goals. In addition, price forecasting of inputs and products is essential to planning the commercial aspects.

The additional financial aspects of farm management include the acquisition of any needed funds, the budgeting and use of funds, such as managing the farm's cash flow, and the forecasting of future needs for expansion, contraction, or changing technology.

Finally, one of the aspects of farm management that is most essential to the business is farm operation accounting. Accounting includes not only keeping production records, but also managing the data generated from such records in order to make future decisions. Also, the farm manager must record business transactions, report taxes, and file documents when required with government and regulatory agencies.

For the farm manager, the reward of making your living from the land must outweigh the long hours, physically demanding work, and many uncertainties involved. Working outdoors in all kinds of weather is an integral part of farm management.

In terms of benefits, both retirement funds and health insurance may be less than that offered in the other industries. There is frequent exposure to the public on those farms that serve as “showplaces” or educational centers.

Qualifications

Most positions require a bachelor's degree in major fields of study such as animal science, agronomy, or even horticulture (depending on the type of farm production), that combines technical agricultural courses with agribusiness courses or work experience. The degree of field experience that farm managers have can be just as important as their academic backgrounds.

Field experience is often required to demonstrate the high degree of dedication essential in good farm managers. Independence is required in making certain decisions. The work

in large corporate farms may require involvement as a team. To keep the operation at its most productive state, the manager must stay abreast of technological advances in the field. In addition to technical skills, supervisory skills are required to effectively utilize personnel.

Employment Sector and Prospects

Self-employment as an owner or operator used to be a viable option for many individuals wishing to enter farm management. However, unless your family owns a farm and the option of taking over the farm exists, the tremendous initial investment and low or nonexistent profit margins often eliminates the possibilities of being an owner or operator. Therefore, the possibility of managing a large corporate or partnership farm is a consideration, yet the number of openings in this field will decrease with an increasingly smaller total number of farms in the United States. One exception to this trend is organic farming, which is increasingly popular and lucrative as people are becoming more health and eco-conscious.

Farm managers will continue to find opportunities if they are willing to live outside of the United States. Individuals seeking such opportunities should contact international agencies working in the geographic area that interests them. Opportunities to move abroad are also published in professional journals such as the *Journal of Animal Science*. In making a long-term commitment such as buying property in another country, look carefully at the country's stability and the local citizens' rights, especially in regard to land tenure.

Employment prospects in aquaculture are good and expected to grow rapidly, according to the Bureau of Labor Statistics. Today, fish farmers account for approximately 15 percent of the total worldwide production of fish and these numbers will grow. As the world population continues to expand and fisheries stocks approach their biological limits, aquaculture will play an increasingly important role in meeting the global demand for fisheries products. Water management will also be increasingly important as global water supplies shrink.

Many public research stations, institutes and agricultural colleges require full-time managers for their farm operations. However, the turnover rate in such places is generally very slow. In addition, these institutions are likely to reduce the funding for their agricultural production research and teaching facilities in the future.

FOOD SCIENCE AND FOOD TECHNOLOGY

Websites

Institute for Food Technology
www.ift.org

Description of Occupation

Food scientists help ensure that food products are healthy and safe. They do so by using their knowledge of science—particularly chemistry and microbiology—to determine that food is safe for consumer consumption. Food scientists' work extends to many areas of the process of food production, including preserving, processing, packaging, storing, and delivering foods.

Inspectors work in monitoring the processing facilities and products, ensuring federal regulations are met. Food scientists research and develop new products. Both technicians and scientists record and analyze the results of research and inspection. Food technicians and scientists apply microbiological principals to food preservation and production. Still others work in designing improved storage packages or facilities for raw food materials and processed products. Some less technical positions exist in designing marketing strategies for new products, especially as the food characteristics relate to diet and nutrition.

Most positions are confined to laboratories or manufacturing facilities. However, in post-harvest technology, time on the job may be split between the office or the laboratory and the field. Work with certain chemicals may be hazardous. Those in food science public relations will be among the few in this field to have frequent contact with the public. Those working in post-harvest technology more than likely will be working with a team of technicians such as agronomists and entomologists.

Qualifications

Food science, technician, and inspection positions usually require a bachelor's degree with a major in food science, food engineering, or food technology. For research and development, an advanced degree is usually required.

Analytical skills and attention to detail are useful. A certain degree of manual dexterity is useful in actual food processing. Creative thinking and initiative are essential in new product development and marketing.

Employment Sector and Prospects

In the public sector, positions exist in research and quality control within the Department of Agriculture and the Federal Drug Administration. Other agencies such as the United Nations, the World Health Organization, and other international organizations offer positions for food scientists.

Many of those in the food science field work in the food processing industry. Many food scientists also work in food and consumer services, and marketing and inspection services. Commercial production positions, as well as positions within research and quality control, exist within the private sector. Generally, you are required to specialize in

a certain food industry, such as citrus, fresh fruit and vegetables, dairy products, or processed meat products.

HORTICULTURE AND LANDSCAPING

Websites

American Horticulture Society
www.ahs.org

American Nursery and Landscape Association
www.anla.org

Description of Occupation

Horticulture is the art and science of cultivating fruits, vegetables, flowers, trees, and shrubs. Landscaping is the decoration or functional alteration of land, by planting trees and shrubs, for example.

Horticulturists seek to breed better varieties and find new ways to grow plants through hydroponics. Individuals may supervise and manage orchards and groves. Some positions may require an individual to raise and tend plants for ornamental purposes. Such positions may fall under the category of greenhouse operation and management or landscaping. For horticulturists working in commercial operations, the demand for exotic and specialty crops provides an opportunity for introducing special intensive practices. Some specialty vegetables are grown using the intensive system of hydroponics. Other systems exist to raise plants strictly organically.

Within landscaping, landscape architects conceptualize, plan, and oversee the design of a parcel of land. Their work involves designing management and maintenance plans for the landscape as well as supervising a crew that plans and tends the vegetation. Furthermore, landscape architects gather information on soil types, gradients, solar exposures, and other critical factors.

The architect's ultimate challenge is to design creative and innovative solutions to make the landscape more functional and aesthetically pleasing. Therefore, they must visualize, sketch, and design projects. To execute projects, they must have keen communication skills to work with crews executing the landscaping plans. This work means constant challenges with each new project in landscaping. To gain approval for the work, the landscape architect must create a proposal that includes detailed renderings and scale models, working drawings for each step in the project, methods of landscaping to be used, materials needed, and a budget.

These positions may have irregular hours when you consider options within commercial production, the Extension Service, or research. Most positions require being out in the field, the greenhouse, or the nursery for the majority of the workday.

Qualifications

A bachelor's degree is expected for most positions unless experience in the field can replace it. A program of study with a major in horticulture often consists of a curriculum combining horticulture and business administration subjects. For more specialized positions such as landscape architects and nursery managers or inspectors, an advanced degree is required. As a standard, a Ph.D. is required for research and development positions, except in the case of technicians.

Horticulturists should have an interest in plants and people and a willingness to work with their hands. They should have patience and a liking for detailed work. Other important qualities are the ability to work independently, to make informed decisions, and to plan and complete projects on schedule. Horticulturists must be able to convey their findings and ideas clearly and simply.

Employment Sector and Prospects

Professional horticulturists will continue to be in demand. Horticulturists work for agricultural experimental stations within the federal government, especially the Department of Agriculture and state and local agencies. Some openings are available within the Cooperative State Research, Education, and Extension Service, especially as urban horticulture programs become more popular. The Department of Agriculture also employs individuals for inspection of nurseries, orchards, and greenhouses. Research in biotechnology to horticulture will continue to provide some positions for individuals with advanced degrees.

The majority of the jobs are in the private sector within commercial vegetable, fruit, ornamental, and floral operations. Laboratories, greenhouses, turf farms, and landscaping companies will be the primary employers. Private industries, such as food processing plants, hire horticulturists to conduct research into ways to improve the quality of food and to preserve the nutritive value of food through processing. Pharmaceutical and chemical firms employ horticulturists to study the use of plants for drugs, chemicals, textile fabrics, and other uses. Some positions include nursery inspection or operation management. They may also work for landscape design firms, public gardens, zoos, theme parks, and arboretums.

HYDROLOGY

Websites

American Institute of Hydrology
www.aihydro.org

Description of Occupation

Hydrologists must have the ability to analyze natural conditions and devise solutions for

existing problems. Field workers communicate with farmers, individually as well as in groups. Water management also involves the study of existing conditions and recommending of new practices. In other cases, this work requires studying the degree of erosion due to water in a field or region and suggesting practices to prevent such erosion. In areas where land is at a premium, hydrologists study the opportunities for economically reclaiming land through drainage systems and overcoming salinity levels.

Qualifications

For either the private or public sector, hydrologists must at least have a bachelor's degree. The U.S. Geological Survey recommends studies in atmospheric science, meteorology, geology, and oceanography. Water law and water policy may also be helpful. Many hydrologist positions require at least a master's degree, although some irrigation technicians and other entry-level positions may only require a bachelor's degree. Researchers and extensionists will be required to have an advanced degree.

Employment Outlook and Prospects

In the public sector, the Water Resources Division of the U.S. Geological Survey employs people in the United States, Puerto Rico, Guam, and the Virgin Islands. Other federal employers are the Forest Service, the Department of Energy, the Environmental Protection Agency, the National Oceanic and Atmospheric Administration, the Bureau of Reclamation, the Natural Resources Conservation Service, the Bureau of Land Management, and the U.S. Army Corps of Engineers. These agencies have a few positions at the federal level, but more entry-level positions are available in county or state offices.

This field is relatively small in the private sector. However, as the land values continue to increase, private sector interest will also increase, particularly regarding land reclamation and erosion control. In addition, in this era of changing weather patterns, "there is quite a market for hydrologists in private consulting firms," says RPCV Julia Burger. For example, such firms will hire hydrologists to locate new sources of aquifers in cities like Los Angeles or New York.

PLANT PROTECTION AND PEST MANAGEMENT

Websites

Crop Life America
www.croplifeamerica.org

Weed Science Society of America
www.wssa.net

Description of Occupation

This field involves the study of insect populations and their life cycles and means for controlling and repelling pests. Pesticide application is the best known means of dealing with pests. Certified individuals use pesticide applications to address the most severe infestations. Individuals may also create models with computers to research the effect of many factors on pest control within a certain crop. Due to the environment and physical risks of pesticides as well as pest resistance to certain pesticides, integrated pest management is becoming increasingly common. Integrated pest management involves a combination of pest management techniques, such as creating physical barriers to pests. Other opportunities exist in the sale of commercial pest and disease control products. Within the realm of plant protection, individuals strive to preserve genetically diverse plants.

If not working in company management, work hours may be irregular. Many positions require time split between the office or the laboratory and the field. In the field, conditions can be difficult. Employees work in physically demanding situations with unpleasant chemicals. In addition, there are health risks involved with working with pesticides. Individuals in research and extension often work as a team member with professionals in this or other disciplines.

Qualifications

Some plant protection and pest management workers deal with problem situations that require prevention or solution. Therefore, creative thinking is a plus for this field. Positions in commercial fields and management may only require a bachelor's degree. Positions in research and extension, both for the private and public sector, will require an advanced degree or several years of experience. Knowledge of technical computer applications will continue to be in demand in both the private and public sector. Ability to handle physical labor in all kinds of weather is another requirement. State and federal laws regulate pesticide workers and they must pass certification exams.

Employment Sector and Prospects

Demand for those experienced with integrated pest control management techniques due to increasing restrictions in pesticide use is expected. Within the public sector, the Cooperative State Research, Education, and Extension Service, the Department of Agriculture's Agricultural Research Service, and other agencies have positions available in this field.

In the private sector, laboratories offer research and technician positions, while agrochemical companies offer positions in sales, management, and research.

RANGE MANAGEMENT AND FORESTRY

Websites

Society for Range Management
www.rangelands.org

Description of Occupation

Range managers manage and protect rangeland to maximize their use with minimal damage to the environment. Foresters manage and plan forests. Range manager responsibilities include advising ranchers and others on new practices for managing and conserving rangelands. To do so, they implement conservation programs that help balance livestock with grazing seasons. To design effective conservation programs over the long-term, the task of recording ecological statistics relevant to the state of the rangelands is essential. This information can then be summarized and utilized by range managers. In addition, ranger managers maintain lands for other uses including wildlife habitats. Much the same as an extensionist, this work combines activities with information and people or animals. Work is often done in lending technical assistance to the local ranching community and providing general education to the public about the natural environment.

For those working in range management, at least 60 percent of their time on the job is spent outdoors. Often these individuals work as a team member with extensionists, agronomists, soil scientists, animal scientists, or conservationists.

Foresters work in many different areas. They can be involved with managing company forests and harvesting timber. This work includes tree inventories, appraisals, price negotiations, handling sales, and drawing up contracts. They can also supervise the planting and growth of new stands of trees in a process called regeneration. Regeneration work involves clearing sites, determining tree types, working with seeds, and pest management. Federal and state government foresters manage public parks and forests. In all these pursuits, foresters must be comfortable with working outdoors, handling sophisticated equipment, and using topographical maps and computers.

Qualifications

A bachelor's degree with extensive experience and often a master's degree are required to be competitive for openings that become available. A background in agronomy, animal science, wildlife management, or conservation is needed. Most range specialists have a bachelor's degree in range science, range management, or range ecology. Computers now figure heavily in scientific studies and range management practices. Rangeland specialists must have public relations, interpersonal, and communications skills.

Forestry requires at least a bachelor's degree in the subject. Courses include science and technology as well as business administration and economics. An understanding of public policy issues and environmental regulations is also important. Some states also have

mandatory licensing requirements. For those who wish to teach forestry or do research, an advanced degree is necessary. Most foresters work outdoors in physically demanding situations. Work is conducted from an office for those involved in managerial work or teaching and research.

Employment Sector and Prospects

Employment prospects for both foresters and range managers will be limited over the next 10 years, the Bureau of Labor Statistics projects. Most rangeland specialists work for the federal government with the U.S. Forest Service, the Natural Resources Conservation Service, the Department of Agriculture, the Bureau of Land Management, the Bureau of Indian Affairs, and the U.S. Fish and Wildlife Service. State and local governments also employ rangeland specialists as planners, extension agents, or state land managers. The federal government employs nearly half of all foresters, mostly in the Department of Agriculture and Agriculture's Forest Service. Federal and state government agencies are expected to have the most demand.

In the private sector, some special interest groups and development firms employ range managers or foresters to assist them in writing environmental impact statements and creating erosion plans. Some rangeland specialists work for ranch owners, banks, trust companies, large landowners, and mining and timber companies. Foresters are also hired by private companies to help with logging initiatives and advise on tree harvesting regulations.

SEED SCIENCE

Websites

American Seed Trade Association
www.amseed.com

Description of Occupation

This discipline focuses on understanding the factors that affect seeds. Since seeds play an essential role in the propagation and improvement of plant material, seed scientists study the means to achieve the safe storage and increase the survivability of seeds. Seed scientists help increase productivity and also study ways to improve the nutritional value of crops and the quality of seed. Some crop scientists study the breeding, physiology, and management of crops and use genetic engineering to develop crops resistant to pests and drought.

Seed scientists test and evaluate the seed viability, seedling vigor, and seed longevity. Using the parameters, such as seedling vigor and seed viability, seeds are tested and certified so that the producer receives a guaranteed quality of the seeds. To prepare seeds to be marketed for propagation, the seeds are dried and the moisture content is measured

and controlled. Following drying, seeds are processed, handled, and marketed to local and overseas clients.

The majority of workers in these positions spend at least 20 percent of their time in the field. However, as technology becomes increasingly sophisticated, it is likely that individuals will spend more and more time in the laboratory.

Qualifications

In general, the educational requirements in this field are identical to those for positions in soil science and agronomy. The ability to work as a team member with other professionals is essential in marketing and management positions. Also, such positions require frequent visits and meetings with individuals or groups of farmers. Research work tends to be the most prevalent position in this field where the time on the job is split between the laboratory and collecting data in the field.

Employment Sector and Prospects

Employment prospects are expected to be moderate. However, there will be a need for continued research as pests and plants continue to adapt to diseases. In the public sector the Department of Agriculture's Agricultural Research Service offers opportunities, especially for those interested in plant genetics. The Cooperative State Research, Education, and Extension Service offers opportunities for individuals seeking field positions and specialist positions on a regional or state level.

As with soil science, agribusinesses seek individuals for positions in sales, marketing, management, fieldwork, and research. Furthermore, major employment opportunities currently lie in private sector research on seeds, especially basic research in genomics, biochemistry, and physiology of seeds and seed quality.

SOIL SCIENCE

Websites

Soil and Water Conservation Society of America
www.swcs.org

Description of Occupation

Soil scientists specifically sample and classify soils and make survey maps from the information gathered in this process. Also, soil and production systems are analyzed for more economical, efficient, and sustainable use. Such analyses may relate to urban and regional planning in addition to farmland use. Principles of soil physics are used in developing and introducing conservation programs. Soil scientists may also be responsible for presenting new and old methods of soil management. Soil scientists work

in four main fields: survey, crop production, soil productivity, and conservation management.

Survey work deals with mapping, classification, and land use. In crop production, soil scientists deal with cultural practices, soil fertility, and management. Soil scientists may work with civil engineers in construction or environmental engineering. In conservation and management work, they deal with erosion control, water quality, and land-use planning.

Government soil scientists may work at the National Cooperative Soil Survey, a group that analyzes the distribution and properties of soil throughout the United States. These soil scientists set up map units and note the way soils relate to each other on the landscape. They classify soils in a nationwide soil classification system. They also work with land-use planners and explain facts about soil to farmers, engineers, ranchers, and natural resource managers.

Soil scientists explain the effects of new chemicals, machines, crop varieties, construction methods, and irrigation techniques on soil. Other soil scientists conduct research, teach, or do extension work. Many soil scientists work as soil conservationists to bring about good land use practices as well as the reduction of erosion, sedimentation, and flooding hazards.

Soil scientists spend most of their time outdoors and often are required to travel, since they must study or do research with a different soil over an assigned locality. Travel is also required if their job involves sales, extension, or international work.

Qualifications

Soil scientists must at least have a bachelor's degree in agronomy, agriculture, or earth science. Soil scientists must be able to speak and write well in order to explain their research and findings. This field sometimes requires outdoor work in rugged terrain.

Employment Sector and Prospects

Soil scientists are well qualified for jobs related to crop production, as well as jobs related to the use of soils for other purposes, such as waste disposal and management. In turn, soil scientists are in demand, particularly by the construction and agricultural industries. Soil scientists are also sought after for their expertise on environmental issues. Soil scientists work in public and private sectors. About half of the scientists in the public sector work for the Department of Agriculture's Natural Resources Conservation Service. Positions are also available with the Department of the Interior, the Environmental Protection Agency, state and local governments, land-appraisal boards, conservation departments, cooperative extension service agencies, experimental stations, and land-grant colleges. Soil scientists also work overseas for the U.S. Agency for International Development and for universities doing research and development in emerging markets. Private employers include banks, loan companies, insurance, and real estate firms,

fertilizer companies, wholesale distributors, and food product companies. Some soil scientists are self-employed.

APPENDICES

ANNOTATED BIBLIOGRAPHY

Editor's note: This section is a compilation of annotated bibliographical references on a variety of agricultural career and job-search topics.

Almanac of American Employers 2002-2003, Plunkett Research, Ltd. Analyzes 500 successful American corporations, including those with agricultural interests. Assesses the economy and hiring trends.

The Career Guide: Dun's Employment Opportunities Directory, Parsippany, NJ: Dun's Marketing Services, 2002.

Careers in Animal Care and Veterinary Science (Career Resource Library), Marinelli, Deborah A., Rosen Publishing Group, 2001.

Careers in Veterinary Medicine Careers, Rev. Ed., Swope, Robert E., Julie Rigby and Leonard F. Seda, McGraw-Hill/Contemporary Books, 2001.

Directories in Print, 22nd Ed. Gale Group. 2002. Gives detailed entries of local, regional, national, and international scope. The publication covers 26 subjects, including a Format Index which lists directories that are published online, disk, Macintosh CD-Rom, and mailing labels. There is also contact information to locate a directory, along with a brief description of those that are in the index.

Guide to Internet Job Searching, 2002-2003, Dikel, Margaret Riley and Frances E. Roehm, McGraw-Hill/Contemporary Books, 2002.

Occupational Outlook Quarterly. Includes the latest national employment trends as compiled quarterly by the federal government. Excellent career descriptions as well as information on job prospects and growth industries. Information can be found online at www.bls.gov/opub/ooq/ooqhome.htm. To subscribe, call 202.512.1800.

Opportunities in Biotechnology Careers, Rev. Ed., Brown, Sheldon S. and Mark Rowh, McGraw-Hill/Contemporary Books, 2000.

Peterson's Graduate & Professional Programs 2002, Volume 4: Graduate Programs in the Physical Sciences, Mathematics, Agricultural Sciences, the Environment & Natural Resources, 36th Ed., Peterson's Guides (Editor), Peterson's Guides, 2001.

VGM Career Horizons, Lincolnwood, IL: NTC Publishing Group

Careers for Animal Lovers and Other Zoological Types, Louise Miller.

Careers for Nature Lovers and Other Outdoor Types, Louise Miller.

Careers in the Environment, Michael Fasulo, Paul Walker.

Opportunities in Animal and Pet Care Careers, Mary Price Lee, Richard S. Lee.

Opportunities in Farming and Agriculture Careers, Donald N. Collins, et al.
Opportunities in Forestry Careers, Christopher M. Wille, Mark Rowh.
Opportunities in Horticulture and Botany, Jerry L. Garner.

Working with Wildlife: A Guide to Careers in the Animal World (Science, College and Career Guidance), Maynard, Thane and Jane Goodall, Orchard Books, 2000.

SOURCES OF JOB LISTINGS

Agribusiness Council Job Bank Service
1312 18th Street, NW, Suite 300
Washington, DC 20036
Phone: 202.296.4563
www.agribusinesscouncil.org/career_network.htm

The American Bee Journal (monthly)
Bee Industries Association
51 S. 2nd Street
Hamilton, IL 62341
Phone: 217.847.3324
www.dadant.com/journal

Notes: A few positions are listed in the classified section of the journal.

American Gardener (bi-monthly)
American Horticultural Society
7931 East Boulevard Drive
Alexandria, VA 22308
Phone: 703.768.5700 or 800.777.7931
www.ahs.org

Notes: This journal lists a few positions that are available in horticultural fields.

American Meteorological Society Employment Announcement (monthly)
45 Beacon Street
Boston, MA 02108
Phone: 617.227.2425
E-mail: amsinfo@ametsoc.org
www.ametsoc.org/AMS/emplymnt/emplinfor.html

American Society of Farm Managers and Rural Appraisers News (bi-monthly)
950 S. Cherry Street, Suite 508
Denver, CO 80246
Phone: 303.758.3513
E-mail: info@agri-associations.org
www.asfmra.org/join_publications.htm#news
Notes: This newsletter contains a few agricultural positions throughout the United States.

American Veterinary Medical Association
1931 N. Meacham Road
Schaumburg, IL 60173
Phone: 800.248.2862
Notes: This publication provides job listings for veterinarians and veterinary technicians.

BioTechniques (monthly)

Eaton Publishing

154 East Central Street

Natick, MA 01760

Phone: 508.655.8282

Notes: This journal of laboratory technology for bioresearch lists positions in related fields.

Career Index (USDA Agricultural Research Service)

5601 Sunnyside Avenue

Beltsville, MD 20705

Phone: 301.504.1638

E-mail: info@ars.usda.gov

www.ars.usda.gov/careers

Notes: This index lists titles, descriptions, contacts, and requirements for available positions in all agencies and services of the USDA.

Chronicle of Higher Education

1255 23rd Street, NW, Suite 700

Washington, DC 20037

Phone: 202.466.1000

chronicle.com/jobs

Notes: This newspaper lists articles related to education and both international and national positions. Most colleges and universities have multiple subscriptions to this and it should be readily located in their libraries.

Communicating For Agriculture

2121 Precinct Line Road

Hurst, TX 76054

Phone: 817.428.4364

www.selfemployedcountry.org/opportunities

ESA Newsletter (monthly)

Entomological Society of America

10001 Derekwood Lane, Suite 100

Lanham, MD 20706

Phone: 301.731.4535

E-mail: esa@entsoc.org

www.entsoc.org

Farm Equipment Manufacturers Association Newsletter (bi-weekly)

1000 Executive Parkway, Suite 100

St. Louis, MO 63141

Phone: 314.878.2304

E-mail: info@farmequip.org

www.farmequip.org

Hotline (bi-monthly)

Peace Corps, Returned Volunteer Services

1111 20th Street, NW

Washington, DC 20526

Phone: 202.692.1430

E-mail: rvinfos@peacecorps.gov

www.peacecorps.gov/index.cfm?shell=resources.former.hotline

Notes: This bulletin lists current opportunities in the public and private sectors, both in the United States and overseas. Current and past issues are available online.

Institute for Food Technologies Employment Referral Service

525 West Van Buren, Suite 1000

Chicago, IL 60607

Phone: 312.782.8424

E-mail: info@ift.org

www.ift.org/cms/?pid=1000277

Leading Edge (monthly)

Society of Exploration Geophysics

P.O. Box 702740

Tulsa, OK 74170

Phone: 918.497.5500

E-mail: web@seg.org

www.seg.org/publications/tle

Notes: This newsletter lists opportunities in the areas of geology and geophysics.

Marketing News (bi-weekly)

311 South Wacker Drive, Suite 5800

Chicago, IL 60606

Phone: 312.542.9000 or 800.AMA.1150

E-mail: info@ama.org

www.marketingpower.com

National Agri-Marketing Association Newsletter (bi-monthly)

11020 King Street, Suite 205

Overland Park, KA 66210

Phone: 913.491.6500

www.agrimarketing.com

National University Extension Association News

One DuPont Circle, Suite 615

Washington, DC 20036

Phone: 202.659.3130

Trail Boss News (monthly)
Society for Range Management
445 Union Boulevard, Suite 230
Lakewood, CO 80228
Phone: 303.986.3309
www.rangelands.org

U.S. Geological Survey Job Line
12201 Sunrise Valley Drive
Reston, VA 20192
Phone: 703.648.4000
E-mail: ask@usgs.gov
www.usgs.gov/ohr

Weed Science Society of America Newsletter (quarterly)
P.O. Box 7050
Lawrence, KS 66044
Phone: 800.627.0629
E-mail: wssa@allenpress.com
www.wssa.net/./wsinfo/pubs/newsletters.htm

ASSOCIATIONS AND ORGANIZATIONS

Agribusiness Council, Inc.
1312 18th Street, NW, Suite 300
Washington, DC 20036
Phone: 202.296.4563
E-mail: info@agribusinesscouncil.org
www.agribusinesscouncil.org

Agricultural Council of America
11020 King Street, Suite 205
Overland Park, KS 66210
Phone: 913.491.1895
E-mail: info@agday.org
www.agday.org

Agricultural Research Service (USDA)
5601 Sunnyside Avenue
Beltsville, MD 20705
Phone: 301.504.1638
E-mail: info@ars.usda.gov
www.ars.usda.gov

American Agricultural Economists Association
415 South Duff Avenue, Suite C
Ames, IA 50010
Phone: 515.233.3202
www.aaea.org

American Agricultural Editors Association
P.O. Box 156
New Prague, MN 56071
Phone: 952.758.6502
E-mail: ageditors@aol.com
www.ageditors.com

American Agricultural Marketing Association
225 Touhy Avenue
Park Ridge, IL 60068
Phone: 312.399.5700

American Entomological Society
1900 Benjamin Franklin Parkway
Philadelphia, PA 19103
Phone: 215.561.3978
E-mail: aes@acnatsci.org

www.acnatsci.org/hosted/aes

American Farm Bureau Federation

225 Touhy Avenue

Park Ridge, IL 60068

Phone: 847.685.8600

www.fb.com

Publications: *There's a New Challenge in Agriculture* (free)

American Farrier's Association

4059 Iron Works Parkway, Suite 1

Lexington, KY 40511

Phone: 859.233.7411

E-mail: farriers@americanfarriers.org

www.americanfarriers.org

American Horticultural Society

7931 East Boulevard Drive

Alexandria, VA 22308

Phone: 703.768.5700 or 800.777.7931

www.ahs.org

American Marketing Association

311 South Wacker Drive, Suite 5800

Chicago, IL 60606

Phone: 312.542.9000 or 800.AMA.1150

E-mail: info@ama.org

www.marketingpower.com

Publications: *The Employment Kit and Careers in Marketing*

American Meteorological Society

45 Beacon Street

Boston, MA 02108

Phone: 617.227.2425

E-mail: amsinfo@ametsoc.org

www.ametsoc.org/AMS

Publications: *Employment Announcement* (monthly)

American Nursery & Landscape Association

1000 Vermont Avenue, NW, Suite 300

Washington, DC 20005

Phone: 202.789.2900

www.anla.org

Publications: *Careers in Partnership with Nature* (brochure – free with self-addressed stamped envelope), containing career possibilities in the nursery industry

American Seed Trade Association
225 Reinekers Lane, Suite 650
Alexandria, VA 22314
Phone: 703.837.8140
www.amseed.com

American Society of Agricultural Engineers
2950 Niles Road
St. Joseph, MI 49085
Phone: 616.429.0300
www.asae.org

Publications: *Agricultural Engineers Yearbook* (annual); *Resource* (monthly); *The Place to Be in Agricultural Engineering* (six pages – free with self-addressed stamped envelope), listing career possibilities, background requirements, and preparation required

American Society of Agronomy
677 South Segoe Road
Madison, WI 53711
Phone: 608.273.8080
www.agronomy.org

Publications: *Exploring Careers in Agronomy, Crops and Soils* (26 pages – free)

American Society of Animal Science
1111 N. Dunlap Avenue
Savoy, IL 61874
Phone: 217.356.9050
E-mail: asas@assoehg.org
www.asas.org

American Society of Farm Managers and Rural Appraisers
950 S. Cherry Street, Suite 508
Denver, CO 80246
Phone: 303.758.3513
E-mail: info@agri-associations.org
www.asfmra.org

American Veterinary Medical Association
1931 N. Meacham Road, Suite 100
Schaumburg, IL 60173
Phone: 847.925.8070 or 800.248.2862
E-mail: avmainfo@avma.org
www.avma.org

Publications: *American Journal of Veterinary Research* (monthly); *Journal of The American Veterinary Medical Association*; *Today's Veterinarian* (brochure – free); *Programs in Veterinary Technology* (free)

Association of Equipment Manufacturers
10 S. Riverside Plaza, Suite 1220
Chicago, IL 60606
Phone: 312.321.1470
E-mail: info@aem.org
www.aem.org

Bee Industries Association
51 S. 2nd Street
Hamilton, IL 62341
Phone: 217.847.3324

CEIP Fund
68 Harrison Avenue
Boston, MA 02111
Phone: 617.426.4375
Publications: *Becoming an Environmental Professional* (140 pages – information on conservation careers, educational requirements, experience, job opportunities, and job search techniques.)

CropLife America
1156 15th Street, NW, Suite 400
Washington, DC 20005
Phone: 202.296.1585
www.croplifeamerica.org

Entomological Society of America
10001 Derekwood Lane, Suite 100
Lanham, MD 20706
Phone: 301.731.4535
E-mail: esa@entsoc.org
www.entsoc.org

Farm Equipment Manufacturers Association
1000 Executive Parkway, Suite 100
St. Louis, MO 63141
Phone: 314.878.2304
E-mail: info@farmequip.org
www.farmequip.org
Publications: *Newsletter* (bi-weekly)

Farm Foundation
1211 West 22nd Street, Suite 216
Oakbrook, IL 60523
Phone: 630.571.9393
www.farmfoundation.org

The Fertilizer Institute
Union Center Plaza
820 First Street, NE, Suite 430
Washington, DC 20002
Phone: 202.962.0490
E-mail: information@tfi.org
www.tfi.org

Food and Agriculture Organization
Liaison Office for North America
2175 K Street, NW, Suite 300
Washington, DC 20437
Phone: 202.653.2400
E-mail: FAO-LOWA@fao.org
www.fao.org/Regional/lowa

Henry A. Wallace Center for Agricultural and Environmental Policy
9200 Edmonston Road, Suite 117
Greenbelt, MD 20770
Phone: 301.441.8777
www.winrock.org/what/wallace_center.cfm

Horticulture
98 N. Washington Street
Boston, MA 02114
Phone: 617.742.5600
www.hortmag.com

Institute for Food Technologies
525 West Van Buren, Suite 1000
Chicago, IL 60607
Phone: 312.782.8424
E-mail: info@ift.org
www.ift.org

International Scientific Communications, Inc.
30 Controls Drive
P.O. Box 870
Shelton, CT 06484
Phone: 203.926.9300
E-mail: iscpubs@iscpubs.com
www.iscpubs.com

Interstate Producers Livestock Association
1705 W. Luthy Drive
Peoria, IL 61615

Phone: 309.691.5360

The Irrigation Association
6540 Arlington Boulevard
Falls Church, VA 22042
Phone: 703.536.7080
www.irrigation.org

National Agri-Marketing Association
11020 King Street, Suite 205
Overland Park, KA 66210
Phone: 913.491.6500
www.nama.org

National Alliance of Independent Crop Consultants
349 East Nolley Drive
Collierville, TN 38017
Phone: 901.861.0511
www.naicc.org

National Aquaculture Association
111 W. Washington Street, Suite 1
Charles Town, WV 25414
Phone: 304.728.2167
E-mail: naa@intrepid.net
www.natlaquaculture.org

National Association of Agricultural Educators
1410 King Street, Suite 400
Alexandria, VA 22314
Phone: 703.838.5885 or 800.772.0939 ext. 4367
E-mail: naae@teamaged.org
www.naae.org

National Association of Broadcasters
1771 N Street, NW
Washington, DC 20036
Phone: 202.429.5300
E-mail: nab@nab.org
www.nab.org
Publications: *Careers in Radio*; *Careers in Television*

National Association of Business Economics
1233 20th Street, NW, #505
Washington, DC 20036
Phone: 202.463.6223

E-mail: nabe@nabe.com

www.nabe.com

Publications: *Careers in Business Economics* (brochure – free); *Business Economics* (quarterly; www.nabe.com/busecon.htm)

National Association of County Agricultural Agents

252 N. Park Street

Decatur, IL 62523

Phone: 217.876.1220

E-mail: nacaaemail@aol.com

www.nacaa.com

Publication: *A Career with the Cooperative Extension Service* (free)

National Association of Extension 4-H Agents

7100 Connecticut Avenue

Chevy Chase, MD 20815

Phone: 301.961.2836

www.nae4ha.org

National Association of State Departments of Agriculture

1156 15th Street, NW, Suite 1020

Washington, DC 20005

Phone: 202.296.9680

www.nasda-hq.org

National Association of State Universities and Land Grant Colleges

1307 New York Avenue, NW, Suite 400

Washington, DC 20005

Phone: 202.478.6040

www.nasulgc.org

National Cattlemen's Beef Association

9110 E. Nichols Avenue, #300

Centennial, CO 80112

www.beef.org

National Council of Agricultural Employers

1112 16th Street, NW, Suite 920

Washington, DC 20036

Phone: 202.728.0300

www.ncaeonline.org

National Council of Farmer Cooperation

50 F Street, NW, Suite 900

Washington, DC 20001

Phone: 202.626.8700

www.ncfc.org

National Farmers Organization
528 Billy Sunday Road
Ames, IA 50010
Phone: 515.292.2000
E-mail: nfo@nfo.org
www.nfo.org

National Farmers Union
11900 East Cornell Avenue
Aurora, CO 80014
Phone: 303.337.5500 or 800.347.1961
www.nfu.org

National Future Farmers of America Organization
1410 King Street, Suite 400
Alexandria, VA 22314
Phone: 703.838.5889
www.ffa.org

Publications: *Think About It* (single copy free), listing over 200 careers in agriculture;
The Chronicle Agricultural Occupations Guidebook; *The Open Door*;
Agricultural Education... Investing in Our Future; *Agriculture: An Industry Too
Big To Ignore*; *Discovering An Agricultural Biotechnology Career That May Be
For You*

National Grange
1616 H Street, NW
Washington, DC 20006
Phone: 202.628.3507
www.nationalgrange.org

National Institute for Science Law and Public Policy
1400 16th Street, NW, Suite 330
Washington, DC 20036
Phone: 202.462.8800
E-mail: nislapp@swankin-turner.com
www.swankin-turner.com/nislapp.html

National University Extension Association
One DuPont Circle, Suite 615
Washington, DC 20036
Phone: 202.659.3130

Organic Trade Association
P.O. Box 547
Greenfield, MA 01302
Phone: 413.774.7511
E-mail: info@ota.com
www.ota.com

Society for Range Management
445 Union Boulevard, Suite 230
Lakewood, CO 80228
Phone: 303.986.3309
www.rangelands.org
Publications: *Careers in Range Science and Range Management* (free)

Society of Exploration Geophysicists
P.O. Box 702740
Tulsa, OK 74170
Phone: 918.497.5500
E-mail: web@seg.org
www.seg.org
Publications: *Careers in Exploration Geophysics* (single copy free), listing career opportunities in geophysics, geology, geomagnetics, hydrology, oceanography, and seismology

The Soil Conservation Society of America
75175 NE Ankeny Road
Ankeny, IA 50021
Phone: 515.289.2331
www.swcs.org

United Fresh Fruit and Vegetable Association
727 N. Washington Street
Alexandria, VA 22314
Phone: 703.836.3410
E-mail: united@uffva.org
www.uffva.org

United States Animal Health Association
P.O. Box K227
Richmond, VA 23288
Phone: 804.285.3210
www.usaha.org

Weed Science Society of America
P.O. Box 7050
Lawrence, KS 66044

Phone: 800.627.0629
E-mail: wssa@allenpress.com
www.wssa.net

Western Growers Association
P.O. Box 2130
Newport Beach, CA 92658
Phone: 949.863.1000
www.wga.com

FEDERAL GOVERNMENT

Department of Agriculture

General Address:

14th Street & Independence Avenue, SW
Washington, DC 20250
Phone: 202.720.2791
www.usda.gov

Agricultural Marketing Service
South Agriculture Building
1400 Independence Avenue, SW, Room 3071
Washington, DC 20250
Phone: 202.720.5115
www.ams.usda.gov

Agricultural Research Service
5601 Sunnyside Avenue
Beltsville, MD 20705
Phone: 301.504.1638
E-mail: info@ars.usda.gov
www.ars.usda.gov

Publications: *A Scientific Career with the ARS; Employment Opportunities for College Graduates in the Food and Agricultural Sciences*

Animal and Plant Health Inspection Service
12th & Independence Avenue, SW
Washington, DC 20250
Phone: 301.734.7799
www.aphis.usda.gov

Economic Research Service
1800 M Street, NW, Room 4145N
Washington, DC 20036
Phone: 202.694.5000
www.ers.usda.gov

Employment & Coordination Staff, Office of Personnel
(Use General Address)

Farm Service Agency
South Agriculture Building
1400 Independence Avenue, SW, Room 3086
Washington, DC 20250
Phone: 202.720.3467

www.fsa.usda.gov

Federal Grain Inspection Service
South Agriculture Building
1400 Independence Avenue, SW, Room 1092
Washington, DC 20250
Phone: 202.720.9170

Food & Nutrition Service
Personnel Division
Employment Branch, Room 809
3101 Park Center Drive
Alexandria, VA 22302
www.fns.usda.gov

Food Safety and Inspection Service
South Agriculture Building
1400 Independence Avenue, SW, Room 3148
Washington, DC 20250
Phone: 202.720.6617
www.fsis.usda.gov

Foreign Agricultural Service
South Agriculture Building
1400 Independence Avenue, SW, Room 5071
Washington, DC 20250
Phone: 202.690.1980
E-mail: fasinfo@fas.usda.gov
www.fas.usda.gov

Forest Service
Sidney R. Yates Building
201 14th Street, SW, 4th Floor, NW
Washington, DC 20250
Phone: 202.205.8333
E-mail: mailroom@fs.fed.us
www.fs.fed.us

Natural Resource Conservation Service
South Agriculture Building
1400 Independence Avenue, SW, Room 5105A
Washington, DC 20250
Phone: 202.720.7246
www.nrcs.usda.gov

World Agricultural Outlook Board
South Agriculture Building
1400 Independence Avenue, SW, Room 5143
Washington, DC 20250
Phone: 202.720.5447
www.usda.gov/oce/waob/waob.htm

Department of Education

General Address:
400 Maryland Avenue, SW
Washington, DC 20202
Phone: 800.USA.LEARN (800.872.5327)
www.ed.gov

Environmental Protection Agency

Ariel Rios Building
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Phone: 202.260.2090
www.epa.gov

Department of Health and Human Services

General Address:
Hubert H. Humphry Building
200 Independence Avenue, SW
Washington, DC 20201
Phone: 202.690.7000
www.dhhs.gov

Food & Drug Administration
Parklawn Building
5600 Fishers Lane
Rockville, MD 20857
Phone: 301.443.1544
www.fda.gov

National Institute of Environmental Health Sciences
P.O. Box 12233
Research Triangle Park, NC 27709
Phone: 919.541.3201
www.niehs.nih.gov

Department of the Interior

General Address:

1849 C Street, NW
Washington, DC 20240
Phone: 202.208.3171
www.doi.gov

Bureau of Land Management
(Use General Address)
Room 5660
Phone: 202.208.6731
www.blm.gov

Bureau of Reclamation
(Use General Address)
Room 7654
Phone: 202.513.0501
www.usbr.gov

National Park Service
(Use General Address)
Room 3113
Phone: 202.208.4747
www.nps.gov

U.S. Fish & Wildlife Service
(Use General Address)
Room 3256
Phone: 202.208.4717
E-mail: contact@fws.gov
www.fws.gov

U.S. Geological Survey
USGS National Center
12201 Sunrise Valley Drive
Reston, VA 20192
Phone: 703.648.4000
E-mail: ask@usgs.gov
www.usgs.gov

Department of Labor

General Address:

Frances Perkins Building

200 Constitution Avenue, NW
Washington, DC 20210
Phone: 202.219.7316
www.dol.gov

Bureau of Labor Statistics
Postal Square Building
2 Massachusetts Avenue, NE
Washington, DC 20212
Phone: 202.691.5200
www.bls.gov

National Oceanic and Atmospheric Administration

14th Street & Constitution Avenue, NW
Room 6013
Washington, DC 20230
Phone: 202.482.6090
www.noaa.gov

U.S. Agency for International Development

Office of Human Resource and USAID International Development
Intern Program Recruitment Branch
Room 658 A State Annex 36
1550 Wilson Boulevard
Rosslyn, VA 20523
Job Hotline: 703.302.4128
www.info.usaid.gov

USAID Development Information Center
1601 N. Kent Street, Room 105
Rosslyn, VA 20523
Phone: 703.875.4818

INTERNET RESOURCES

AgriCareers

www.ag.ncat.edu/extension/programs/dte/careersites.html

Agriculture Biotech Chemical Jobs

www.nationjob.com/ag

Agriculture Jobs

www.ihiresecondaryteachers.com

American Horticultural Society

www.ahs.org

The Cooperative State Research, Education, and Extension Service

www.recusda.gov/statepartners/usa.htm

EnviroEducation.Com

www.enviroeducation.com

Jobhog.net

www.jobhog.org

National Future Farmers of America Organization

www.ffa.org

National Peace Corps Association

www.rpcv.org

Peace Corps

www.peacecorps.gov

Peterson's Guides

www.petersons.com

PlanetAg

www.fl-ag.com/PlanetAg/careers.htm

Smithsonian Institutions

www.si.edu

United Nations

undcp.org/unlinks.html