CHAPTER 2

Achieving Success in Horticulture

OBJECTIVES

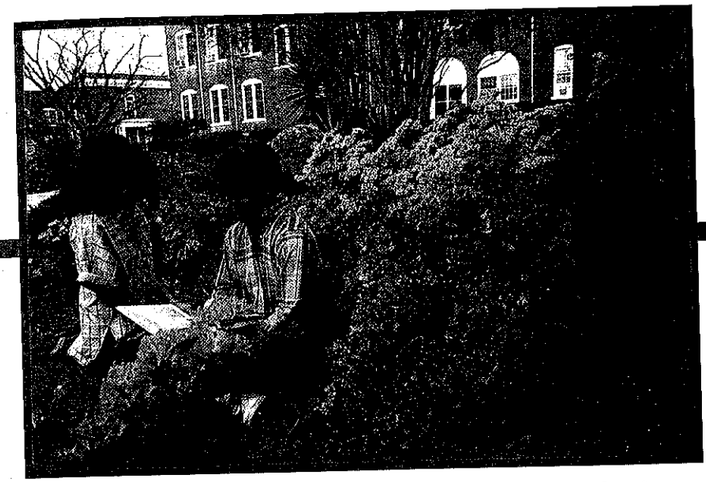
This chapter covers the careers in horticulture and the personal skills needed to enter and advance. It has the following objectives:

1. Explain how to prepare for a career in horticulture
2. Relate employability skills to information, resources, and systems
3. Plan and conduct supervised experience programs
4. Identify employer expectations in the workplace
5. Describe how to get and succeed in a job
6. Demonstrate occupational and personal safety in the workplace
7. List examples of careers in the horticulture industry

TERMS

arboretum
botanical garden
career
career goal
citizenship
garden center
goal setting
ground fault circuit interrupter (GFCI)
horticultural garden
information
job
job interview
landscape maintenance
landscape nursery
material safety data sheet (MSDS)
nursery production
occupation
personal protective equipment (PPE)
personal skills
resource
safety
supervised experience (SE)
system
training plan
work habit





2-1. Entering a horticulture career will require the appropriate education.

HORTICULTURE is many things. It is an art as old as the Garden of Eden, a science as new as the future, and a technology limited only by resources. It is a hobby to some and a profession to others.

Being successful in our work is an important part of our lives. People want to be successful. We do not want to fail. We don't feel good when we fail. Fortunately, we are able to learn how to be successful and avoid failure.

Horticulture deals with the development, improvement, growth, distribution, and use of fruits, vegetables, and ornamental plants including turfgrass. Many people are needed in these areas. Some must have specific education and experience. Choosing a career is one of the most important decisions a person makes. Time and energy are needed to make the best decision. The field of horticulture offers many opportunities for qualified people. If you are interested in a career in horticulture, conduct a thorough study to identify the occupations and training needed.

PREPARING FOR A CAREER IN HORTICULTURE

Many different careers are available in the horticulture industry. Every local community in North America has opportunities for career success in horticulture. Education, personal skills, experience, and hard work are needed to advance in these careers.

Horticulture career opportunities are organized around the areas of the horticulture industry. In addition, several specialized careers are found that may not be a part of one of the areas of horticulture. The three major career areas of the horticulture industry are: ornamental horticulture, olericulture, and pomology.

ENTREPRENEURSHIP

People who are self-employed are often known as entrepreneurs. An entrepreneur has additional demands. Besides needing job skills, he or she must also know how to successfully manage a landscape maintenance service, flower shop, or other kind of venture.

Entrepreneurship is the ownership and management of a business. It involves seeking to meet a market need. Initiative and risk are involved. Most often, a product or service is provided that is not otherwise available. Entrepreneurship plays a very important role in small business and is possible in the United States because of the free enterprise system.

Free enterprise allows people to own property and pursue business opportunities. It is sometimes known as capitalism. The roots of free enterprise are in the economic system of the United States. People who start and own businesses can have financial gain if the ventures are successful. They risk losing all they have invested if their businesses fail.



2-2. Personal communication skills are important in being successful. (Courtesy, Jasper S. Lee)

MAKING GOOD CHOICES

People want to make good decisions when choosing careers. They need to study information about careers and assess their interests. Part-time work and observing horticulturists will provide information to help make a good decision. School counselors and horticulture teachers also have useful information.

A ***career*** is the general direction of a person's life as related to work in the field of horticulture. It includes a succession of horticulture occupations and jobs. Individuals start at a lower level and advance on the basis of interest, productivity, and education.

An ***occupation*** is specific work that has a title and general duties that a person in the occupation would perform. The occupations are often organized in sequence. The entry-level occupations are available to people without experience. In some cases, more responsible entry-level horticulture occupations may have educational requirements.

A ***job*** is the specific work that a person in a horticulture occupation performs. It is often at a certain site and performed for remuneration, such as salary and benefits. Jobs are with specific employers. The same occupation can be found at many different employers. People can share the same occupation but not the same job. People sometimes change employers and jobs but keep the same occupational title.

BEING SUCCESSFUL IN A CAREER

People want to be successful. Success often depends on the personal skills of an individual. ***Personal skills*** are the abilities of an individual to relate to other people in a productive manner. People can develop personal skills. Once a person has the education and a job, they need to go about work in a manner that shows that they can be productive.

Being successful involves setting goals and going about achieving them. A ***career goal*** is the level of accomplishment you want to make in your work. The first step is to set goals by a process known as goal setting. ***Goal setting*** is describing what we want to achieve in life. In the process, people must consider their personal interests and what is realistic for them to achieve. As goals are set, steps to achieve each goal must be identified. Ways and means to accomplish the steps and deadlines for reaching each step are set.

Goals can change. People sometimes gain more information and decide that goals they have set need to be modified. It is smart to regularly assess and modify goals. You want to be sure that you achieve what you are capable of doing.

Education and Training

Entering a horticulture career will require appropriate education. The education is available through schools, practical experience, and other special opportunities.

Horticultural training is offered in high schools, community colleges, and universities. High school horticulture classes may be offered in the agriculture department of the school. School student organizations include the National FFA Organization and NJHA. Community colleges may have one- and two-year programs. Students in two-year programs may join the PAS—a national organization for students in agricultural areas. Universities typically require four years for a baccalaureate degree in horticulture. Masters and doctoral degrees are also offered at some universities. Arboreta and public gardens also offer education in horticulture.



2-3. Education and training are available through schools, practical experience, and other special opportunities.

The educational requirements of horticulture occupations will vary. Some will require a university degree; others will require high school or community college education. A few horticulture occupations have no formal education requirements. These are usually the lowest level jobs and offer little opportunity for advancement.

The education to prepare for a horticulture career should provide a good background in plant science and related areas. It should include soils and soil preparation and management. Plant propagation, pest control, fertilization, and other areas should be included in the education. Plant materials identification and use should be a part of the education. In some cases, equipment operation and maintenance will be necessary. High level positions will require education in business management and human resources. Individuals should determine the needs of the occupation that is of interest to them. Some require high levels of specialized education.

INFORMATION, RESOURCES, AND SYSTEMS

Staying up-to-date in horticulture requires continuing education. Seeking information, gathering resources, and exploring systems is a part of gaining and maintaining horticultural skills.

Information is knowledge or news that is communicated. People need good information in order to make the best possible decisions. Locating, assessing, and using information is important in most careers today. We must try to stay up-to-date in order to be successful. Some information deals with interpersonal skills and systems operation. Other information deals with technical subjects.

LOCATING INFORMATION

When looking for information, consider the forms it is in and the sources it is from. Also, determine if the information is up-to-date and accurate. In the equipment area, manufacturers regularly send information to local dealers.

Sources of information include the following:

- Employers—Employers often have brochures, handbooks, or other materials that help guide employees.
- Publishers—Commercial publishers produce books, magazines, and newspapers. Some publishers also produce information in electronic forms.
- Government agencies—Various agencies of local, state, and federal government have materials. Many states have labor departments or similar offices with information on jobs and personal skill development. The U.S. Department of Labor and the Occupational Safety and Health Administration (OSHA) have a wide range of materials that may be available free of charge.
- Universities—Many universities have information offices that produce bulletins and other materials. Most maintain Web sites where information can also be obtained.
- Research/Test Laboratories—Information on power tools and equipment is available from research and/or test laboratories. Consumer Reports operates a laboratory that tests many consumer products, with some relating to power tools and lawn care equipment. Underwriters Laboratory is involved in testing electrical supplies and equipment.

- Industries—Suppliers of plants, seed, fertilizer, equipment, and other products used in horticulture often produce bulletins and manuals. These materials may cover using specific products, as well as how to build relationships in selling to and dealing with customers.
- Associations—Associations may produce materials with quality information. An example would be a nursery association journal.



2-4. Books are good sources of information.

Information is available in various forms. The most common forms of information are:

- Books—Books provide basic information about a subject. Most books have been carefully written and reviewed to assure accuracy. Students in school use textbooks.
- Bulletins—Bulletins are small publications that often report the findings of research. They are good sources of information, but several are needed. The readers must often draw their own conclusions from the research.
- Magazines—Magazines are published weekly, monthly, or on some other schedule. Many magazines address horticulture, landscaping, and related areas.
- Newspapers—Newspapers are published daily or weekly. Many have a wide range of news stories. Some trade papers relate specifically to horticulture.
- Manuals—Manuals are publications that accompany products to provide details about the products. Manuals may also include assembly and use instructions.
- Electronic forms—Electronic forms include information from the Internet and information stored on disks and CDs.

ASSESSING INFORMATION

Assess information to see if it is accurate and appropriate for your needs. Using incorrect or out-of-date information may result in poor decisions and relationships. Factors to consider in assessing information include:

- Source—Is the source reliable? Does the source use reviewers or other procedures to assure technical accuracy?
- Legal accuracy—Is the information accurate in terms of laws and policies?
- Operation—Does the material show systems and relationships? Does the material promote teamwork and harmony in the workplace?
- Date—When was the information prepared? Up-to-date information is essential.
- Illustrations—Is the material illustrated with photographs and line drawings? Are the illustrations attractive and accurate?
- Safety—Does the material promote safe practices?
- Availability—Is the information readily available at a reasonable cost?

RESOURCES

Resources include information, personal contacts within the horticultural industry, and the materials, tools, and equipment needed in the work. A ***resource*** is a source of help or supplies. Many resources are available from manufacturers of seeds and chemicals as well as of tools and equipment.

Another important resource is the money to carry out an enterprise. Money is needed to purchase equipment, hire employees, and pay other expenses. Money needs vary depending on the nature of the enterprise.

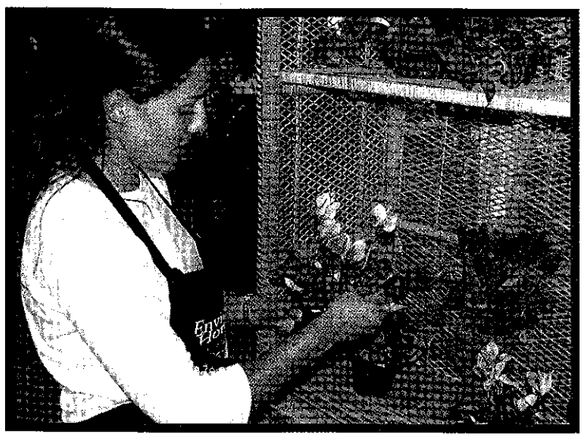
Good, capable people are important resources. Employees need to have the skills to do their work. They need to be able to deal with customers as well as work with others.

SYSTEMS OF OPERATION

"Systems of operation" refers to system dynamics. Systems involve using information and resources in the most efficient and effective manner. They deal with technology, mechanics, people and culture, and organization—the ways people get work done. A ***system*** is a set of facts, principles, procedures, and rules arranged in an orderly form linking the various parts. Each process or component of the system must do what it is supposed to do. If it does not, the system will not function properly. To be successful in life, you must develop an understanding of relationships between the systems that you function in and with daily, and the best way to work through and with these systems. Various system approaches are used in the many different areas of horticulture.

USING SUPERVISED EXPERIENCE TO DEVELOP EMPLOYABILITY SKILLS

Supervised experience (SE) is the part of agricultural education that allows students to practice what they have learned in the classroom. It is composed of planned "learning by doing" activities carried out outside normal class time. The activities are supervised by the teacher. (Supervised experience is also known as supervised agricultural experience, or SAE.)



2-5. Practical experience helps develop job skills.

The object of SE is to provide planned and practical activities that help develop skills needed to be successful in the workplace or in life. Supervised experience is usually planned around the goals and career plans of each student. The teacher supervises the experiences to make them more meaningful and relate them to the classroom instruction. The teacher cooperates with parents and other adults to provide the most meaningful experiences for students. Older students may work in businesses and are then supervised by their employers in cooperation with the teacher.

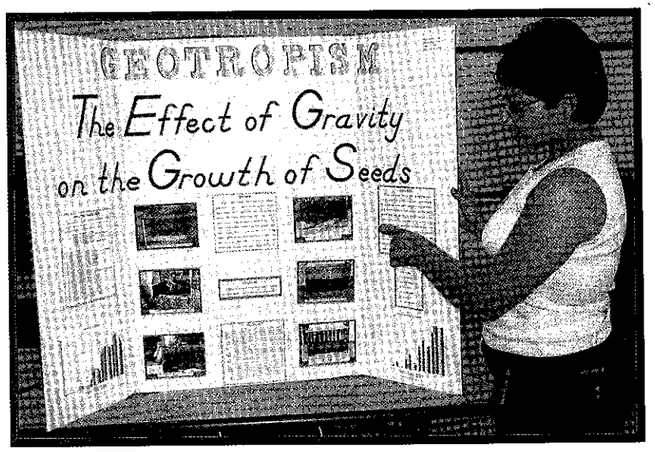
Students are involved in deciding and planning their SE. This helps assure that the experiences are interesting and important to them. Students should list their career goals before beginning to plan their SE.

PLANNING

Supervised experience is often planned as a program. A supervised experience program is a series of individualized learning activities. The series is planned by the student, teacher, parents or guardians, and, if applicable, an employer. SE should be based on the student's interests and career goals. Planning usually involves a sequence of activities. It begins with simple or introductory activities and moves to more advanced activities. The activities are also tied to the level of instruction in the classroom.

Four kinds of supervised experience are widely used. Planning often involves choosing the kind the student will have. The kinds are:

- Exploratory—Exploratory SE is supervised experience that helps students explore and develop their interests. It provides the opportunity to look at a number of subjects. Exploratory SE is often the first kind of supervised experience that a student has upon enrolling in horticulture. The purpose of exploratory SE is to help students understand and appreciate the field of horticulture. Students in the earliest stages of instruction in horticulture benefit the most from exploratory SE.
- Placement—Placement SE is supervised experience that involves carrying out activities at a greenhouse, nursery, golf course, or in another horticultural business. In this experience, you are typically working for another individual. The purpose is to provide practical experiences needed to enter and advance in a particular occupation. The employer provides the facilities and other resources needed for the training. Students are often paid for their work.
- Entrepreneurship (or ownership)—Entrepreneurship SE is supervised experience in which the student owns an enterprise. Students may own small businesses, such as lawn-mowing services, vegetable or fruit stands, or flower-arranging businesses. Students may carry out entrepreneurship SE from their homes or other locations. Students own materials and other resources for their enterprises. Entrepreneurship SE helps students develop skills needed to own and manage a business.
- Research/Experimentation—Research/experimentation SE is supervised experience that involves identifying a particular science-based problem, searching for information



2-6. A display at an agriscience fair is being used to present the findings of this Research/ Experimentation SE. (Courtesy, Jasper S. Lee)

about it, and conducting a scientific experiment to arrive at a conclusion. The student makes recommendations about how to solve the problem. The activities are often closely related to instruction in areas of science.

Training Plan

A ***training plan*** is a written statement of supervised experience intentions. Information in the plan relates what you learn in class to your SE. A first step in planning is to develop a tentative career or education goal. A goal is where you want to be in a few years. Activities in the plan are intended to lead toward the goal. These activities involve the job skills you will need. From these activities, you will develop the ability to do the work of an occupation.

Training plans may include improvement activities and supplementary practices. These are things done in addition to the supervised experience skills. Often, these support student achievement.

CONDUCTING

Managing supervised experience begins after it is underway. While conducting and managing your SE, learning by doing activities that help develop skills needed to be successful in the workplace or in life and those planned around goals and career plans should be your primary focus. You want to fulfill supervised experience responsibilities to maximize your learning.

Record Keeping

Record keeping is recording supervised experience activities. The information may be written on paper or prepared using computer software. Your state or school may have approved SE record keeping systems. If so, you will be instructed to use what has been selected.

Several kinds of records are kept. Most important is a list of the experiences you have gained. This list will be valuable as you apply for FFA awards. Records are also needed of the income and expenses related to your SE. Financial records are necessary in determining the success of an enterprise. Good records are also important in making FFA advancements. Filling out awards forms is easier when you have good records. The degree of accuracy is also improved.

Expanding

As you develop skills, you will want to expand into new or more advanced areas. Expanding involves continual planning, assessing, and adjusting your direction.

Several factors involved in expanding supervised experience are:

- Follow good work practices.
- Seek to develop new skills and learn new things.
- Expand the scope of your SE. Add more plants or take on additional responsibility.
- Strive for success! You want to learn and achieve just as much as you possibly can.
- Gain recognition for accomplishments through the FFA. The records you keep are important. Fill out application forms in detail to explain what you have done.

GETTING AND SUCCEEDING IN A JOB

What employers want from the people they hire is often known as expectations. Some of these require considerable skill. Others focus on being at work on time and concentrating on the tasks to be done while at work.

GENERAL EMPLOYER EXPECTATIONS

Some of the expectations employers have for their employees are found in almost all jobs. These are broad and promote teamwork by employees. Here are several important examples:

- Responsible behavior—Act responsibly in caring for tools, equipment, and facilities. Do what you say you will do. Correct errors. Do not waste resources of the employer, including materials and your time. Do not abuse equipment and facilities.



2-7. Properly installing sod involves assuming responsibility.

- Ability to communicate—The ability to receive and share information is important. Listen to what others say, especially supervisors. Speak or write using good language skills.
- Job ability—People need the skill and knowledge to do the work. Some training may be provided by the employer, but most people need to have basic skills. A good general education is always important.
- Willingness to be a team player—Most jobs involve groups of people working together. People must get along and assume their share of the work. In many cases, doing a little more than the minimum promotes good team relationships. Consider the other workers. Help assure a safe, productive work environment. Respect the cultural differences of co-workers. Cultural diversity is differences in people based on their upbringing or ancestry. These differences may relate to foods, dress, faiths, and other practices.
- Professionalism—Dress and act professionally. An appropriate appearance is always important.
- Honesty—Being honest is essential to long-term success. Tell the truth. Admit mistakes. (Take steps never to repeat a mistake.)
- Ability to maintain good customer relationships—Almost every job involves some dealings with people who are not employees. Having a positive, helpful, friendly approach always pays dividends. In selling, remember that "the customer is always right." That is true even if the situation is flawed. Practice good interpersonal skills.

Personal Skills and Work Habits

Personal skills help people toward job success. They may be known as work habits. A ***work habit*** is a routine that automatically demonstrates good practices in relation to work. We don't have to think about a work habit—we just do it! Many personal skills are involved in work. Making them habits promotes success.

A few examples of personal skills are:

- Being loyal—Employers like employees who are loyal. They want employees to say good things about their work and their employers.
- Having a positive lifestyle—Have an approach to life that makes you a good worker. What you do after work hours can affect your ability at work.
- Learning new things—Work demands change. People must learn new job skills. Always be willing to learn. Be anxious to be able to do a better job for your employer.

- Accepting others—All people can make contributions. Never be biased toward others. Skin color, gender, language, and other differences should never be the basis of prejudice.
- Respecting others—All people deserve respect. Differences of opinion must be settled in constructive ways. Violence is never acceptable at home or away from home. Physically abusing another person—spouse, child, parent, or someone else—is totally unacceptable.
- Having a sense of humor—A sense of humor is the ability to laugh at yourself when you make a mistake rather than be upset by it. Of course, you must take action to correct the mistake.

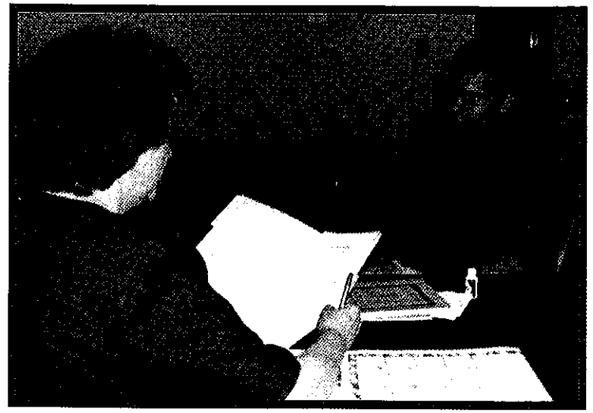
Citizenship

Citizenship is the status of being a legal citizen of a nation, with rights and duties. The Constitution of the United States provides rights to citizens. To deserve these rights, citizens have duties and responsibilities. These form the attributes of a good citizen.

Laws of the United States provide conditions for participation as a citizen. Among the rights of a citizen are the right to vote; the ability to own property; and freedom of speech, religion, and the press. Each of these has certain conditions that protect people and the overall well-being of the nation.

People who are good citizens have desired traits:

- Observing the law—Laws are followed in all regards.
- Supporting charities and worthy causes—Needy people benefit from the help of others.
- Voting—Voting is a privilege. Citizens can vote at age 18 provided they have registered and not lost the right to vote because of criminal convictions.
- Supporting the well-being of others—Citizens participate in decision making for their communities.
- Being patriotic—Patriotism is admiration for and loyalty to one's country. Citizens take pride in their country.
- Having pride—Good citizens take pride in their communities, jobs, and homes.
- Contributing to society—Being a productive worker, good student in school, or other socially useful person is a contribution to the overall betterment of society.



2-8. A teacher or counselor can help you with the job search process.

FINDING JOB OPENINGS

A person who is not an entrepreneur will likely work for another person or employer. Finding a job is not always easy. Knowing how to go about the job search process is important. Landing a job is part of gaining employment.

Some suggestions for finding job openings are:

- Directly contact a potential employer in person, by telephone, or by email.
- Visit human resource offices of potential employers.
- Visit placement offices to identify job openings.
- Newspapers, magazines, television, and radio may have announcements of job openings.
- Use job postings on the Internet.
- Ask family and friends about possible job openings.
- Use contacts with teachers, counselors, and others at your school.

APPLYING FOR A JOB

Once a job opening has been found, the next steps are to apply for the job and go through the employment process. This may involve filling out an application form, writing a letter of application, preparing a personal data sheet, and going for an interview. It is important to properly prepare written job application materials. Why? The written material you submit represents you. Always spell words correctly, use correct grammar, give accurate information, and write legibly. Be neat!

A part of applying for a job is going for an interview. A ***job interview*** is a personal appearance of the job applicant with the employer. It provides information about you to the employer and provides you with information about the employer. Taking a job is an important step. Both you and your employer need to understand each other.

Here are some suggestions in making a job interview:

- Take needed information and materials to the interview.
- Groom and dress appropriately.
- Arrive on time.
- Speak clearly and confidently and use good manners.
- Conclude the interview on time unless the individuals interviewing you wish to continue.

The employer will likely indicate when a decision will be made about the job during your interview. Give the employer that amount of time. Do not call or visit the employer about the job. When you hear from an interview, it will be to offer you the job or indicate that the job has been offered to another person. In either case, always appropriately thank the individual that contacts you.

If you get the job offer, ask when the work would begin and any other questions you may have. Indicate that you will provide a response within the time frame allowed. You may want to talk with people you trust before making a final decision. If you do not want the position, indicate to the employer that you have carefully considered the offer and feel that it is in your best interest not to accept. If you want the job, indicate that you accept it. In either case, be appreciative of the offer and the courtesy you have received.

GETTING ALONG ON THE JOB

Getting along on a job is essential. People who work for others must show that they will be productive. They need to have important personal skills. Here are a few essential personal skills:

- Work ethic—Work ethic is how a person views work. It reflects a person's attitude toward work. Successful people view work as a natural part of life. They strive to be productive as workers. Showing pride in work, taking care of tools and equipment, and doing extra work are indications of work ethic.
- Getting along with people—The ability to get along with other people is important in a job. You need



2-9. The ability to get along with others is important in a job. (Courtesy, Jerry D. Gibson, North Carolina)

to get along with those you work with as well as the public. Being friendly, attentive, and getting along with customers is essential. Research indicates that more people lose their jobs because they cannot get along with other people than for any other reason!

- Honesty—Honesty is the trait of individuals who have high principles. They do not steal, lie, or cheat. People who are honest are truthful. They do not speak or write inaccurate information. Honest people always do what they say they will do. Honesty includes paying debts and obeying laws and rules.
- Life style—Life style is how a person goes about living. People need a life style that builds their well-being as well as that of the people around them. Keeping the human body in good condition is important. Getting adequate sleep, exercise, and nutrition promotes well-being. Substances that impair the body are to be avoided. A good life style helps a person to be productive when on the job.
- Enthusiasm—Enthusiasm is indicated by the energy that a person demonstrates when talking or moving. They show enthusiasm and go about work in a way to get the job done.
- Dedication—Dedication is probably best described as loyalty to work. The work has a high priority in a person's life. The individual goes about work to do what needs to be done as efficiently as possible.
- Education and skill—Education and skill are important in most jobs. People gain education and skill through school and practical experience. Education includes the ability to read, write, and do the necessary mathematics. Computer skills are often needed for a job.
- Dress, grooming, and personal hygiene—How people dress and present themselves create an image of the person. Being dressed appropriately is important. Never dress in clothes that reflect fads nor groom your hair in a style that is a fad. Leave off inappropriate jewelry. Taking regular baths, using deodorant, and brushing teeth help make a good impression on others.

OCCUPATIONAL AND PERSONAL SAFETY

Safety is the prevention of injury and loss. Being safe is being free of harm and danger. This applies to you and to those around you both in the workplace and in your personal life. Removing hazards, preventing accidents, and having a productive learning and working environment are a part of safety. We all need to "think safety" by anticipating dangers and taking steps to avoid them.

OCCUPATIONAL SAFETY

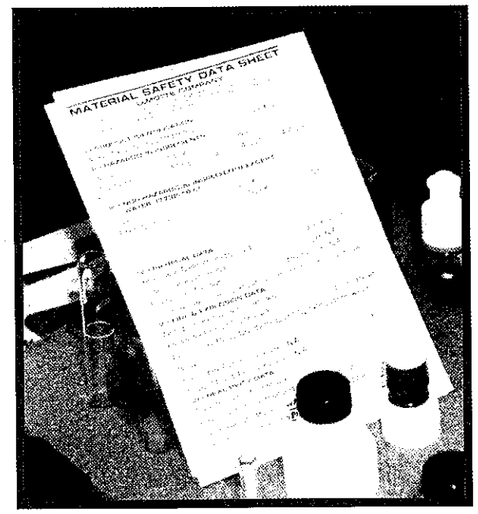
Safety is an important part of our work duties. We often refer to safety in our work as occupational safety. We practice safety ourselves as well as promote a work environment that is safe for all people.

Potential hazards are found in a wide range of occupational situations. A few sources of hazards are:

- Chemicals—Some chemicals are very hazardous. Know how to use all chemicals properly. Always follow safety procedures. Refer to reliable information on chemicals. Almost all chemicals are accompanied by material safety data sheets. A ***material safety data sheet (MSDS)*** is a sheet containing information about the safe use of a chemical and the steps to take in case of an accident. Greenhouses and other businesses often have readily available notebooks of MSDS materials, post the sheets in the work area, or have a readily available computer disk or online source with the information.
- Organisms—Living plants, animals, and other organisms can cause disease and injury. Know the characteristics of organisms and the hazards they pose. Discarded tissues should be properly disposed of.
- Fire and heat—Hot plates and open flames can cause severe burns. Use forceps, gloves, and other protective devices.
- Sharps—Sharps are objects that can cause cuts and penetrate the skin. These include normally sharp objects as well as broken test tubes, microscope slides, and other equip-

Table 2–1. General Safety Rules

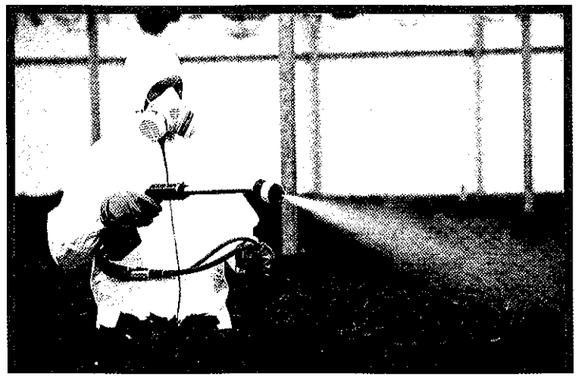
- Always use personal protective equipment.
- Identify potential hazards.
- Learn practices that reduce risks of hazards.
- Always follow safe practices.
- Read and follow instructions.
- Keep equipment in good condition.
- Remove hazards.
- Alert other people to hazards.
- Never take unnecessary risk.
- Know the steps to take in case of an accident.
- Have a telephone nearby and emergency numbers posted.
- Place well-stocked first-aid kits near potential hazards.



2-10. Chemicals must have a Material Safety Data Sheet (MSDS).

ment. Every lab should have an appropriate way to dispose of sharps. Wearing proper gloves can help prevent injury.

- Hand tools—Common hand tools include hammers, wrenches, and measuring devices. Always use hand tools properly. Be sure the tools are in good condition. Never use a tool for a job it wasn't designed to do. Wear eye, hearing, skin, and respiratory system protection.
- Power tools—Power tools vary with the kind of job a person does. Examples of power tools include drills, chain saws, grinders, mowers, trimmers, and edgers. Know how to use power tools properly. Know the hazards associated with them. Take steps to prevent injury, such as using eye, hearing, skin, and respiratory system protection.
- Tractors and equipment—Tractors and equipment range from those used on golf courses to those used in other horticultural businesses. Be sure equipment is in good condition. Know how to use equipment properly to avoid injuries. Never go too fast. Avoid unstable areas and steep hills or banks.
- Engines and motors—Engines and motors often produce a lot of power and heat. Know how to use them. Pay particular attention to the locations of moving parts. Keep engines and motors properly serviced and in good condition. Always follow safety practices. Safety shields should always be in place.
- Electricity—Electricity can cause shock, including injury or death. Use it properly. Be sure all installations have been correctly made. Ground fault circuit interrupters should be on all lines to power tools and water features. A ***Ground fault circuit interrupter (GFCI)*** is designed to protect people from electrical shock caused by short-circuits.



2–11. Personal protective equipment should be worn properly to assure protection. (Courtesy, Agricultural Research Service, USDA)

The practices we follow in being safe vary with the nature of the work. Employers are expected to inform workers of hazards and provide for their safety. This, however, does not relieve employees of their safety responsibilities.

Some occupations have hazards that require personal protective equipment. ***Personal protective equipment (PPE)*** is safety equipment used to protect from injury. It may be designed to protect the eyes, hearing, the respiratory system, the skin, feet, and the overall body. PPE should always be used when working with chemicals or around equipment. Safety goggles and glasses are particularly important in many horticultural activities. Properly fitted goggles are best.

CAREER OPPORTUNITIES IN HORTICULTURE

The opportunities in horticulture may be as an entrepreneur or as an employee. An individual can be successful in either type of employment. Examples of horticulture career areas with employment opportunities are described here.

LANDSCAPE HORTICULTURE

Production Nursery

Nursery production is the growing of plants in containers or fields. Woody plants are grown from seedlings, liners, or rooted cuttings to marketable sizes for sale on the wholesale market. Propagation is with seed, unrooted cuttings, and by grafting. Many producers specialize in specific types of nursery stock, such as fruit trees, shade trees, container plants, broad-leaved evergreens, or needle evergreens. Here are a few occupations in nursery production:

- Propagator—produces new plants by selected propagation techniques, such as grafting, budding, layering, and rooting. Supervises the work and training of propagation crews.
- Inventory Manager—maintains records of all plant materials; number of plants by species, variety or cultivar, age, location; and other important data. This information helps the nursery fill orders.
- Field Supervisor—supervises crews as they work in the production of plants and trains inexperienced workers. Responsible for informing employees of the dangers and risks involved in their job duties. Also, responsible for having each job performed properly without injury to workers or crops.
- Manager—coordinates entire nursery operation. Does the hiring, firing, promoting, recommends pay raises, and makes long-term plans to maintain minimal cost production and insure profits. This may involve purchasing new equipment, developing pro-



2-12. A salesperson may attend trade shows for product promotion. (Courtesy, Agricultural Research Service, USDA)

duction budgets, changing to new or different chemicals, determining marketing trends, planting different cultivars of plants, or building or expanding storage facilities.

- Salesperson—identifies and develops customers in a given geographical region. Is responsible for attending seminars and trade shows for product promotion. This may involve managing a booth at a trade show.
- Sales Manager—coordinates the sale of nursery products. Trains new salespeople and assigns them to specific areas. Reports changes in demand trends reflected by orders and makes recommendations for new products requested by the clientele.
- Shipping Supervisor (Traffic Manager)—supervises the labeling, packaging, and movement of materials in preparation for shipment.

Landscape Nursery

The ***landscape nursery*** area is concerned with the preparation of sites for landscaping and the purchase and planting of trees, shrubs, evergreens, vines, and turfgrasses to meet the specifications of the landscape architect or designer. The construction components (structures, walls, terraces, and sidewalks) that are part of the landscape design may be subcontracted. Here are a few landscape nursery occupations:

- Construction Supervisor—is in charge of the actual construction on a site. Is responsible for hiring, training, firing, and retaining employees to do high quality work.
- Construction Superintendent—coordinates the various construction jobs and maintains the proper staff. Determines job selection for each crew and makes certain that each crew has the necessary materials and equipment to do their job.

- Designer—prepares landscape designs for homes and commercial buildings matching plant material with the micro-environment of the site and the client's needs. In contrast, the landscape architect designs mainly for shopping malls, industrial complexes, and other large projects.
- Salesperson—keeps informed about building construction and development plans in their assigned area. Makes customers aware of the availability and quality of the company for landscape work. Prepares and submits bids for landscape jobs. Interprets landscape drawings.



2-13. Landscape designers are trained in the art of design and the science of growing horticultural plants. (Courtesy, Ron Biondo, Illinois)

Landscape Maintenance

Landscape maintenance is the care of established landscapes. It involves cultural practices—such as mowing, spraying, pruning, weed control, and fertilization—to maintain a landscape. Because the novice can start a business of this sort on a relatively small scale with a small initial investment, this is often a good way for young people to start a private business. Landscape maintenance is seasonal in most locations. However, expansion and diversity of duties have resulted in year-round work.

Here are a few landscape maintenance occupations:

- Crew Supervisor—supervises workers on individual jobs and trains new workers in handling special equipment, such as sprayers and mowers.
- Superintendent of Operations—coordinates the maintenance jobs and assigns crews to specific jobs in larger firms that have an administrating manager.



2-14. Landscape maintenance technicians are trained in and given charge of maintaining an existing landscape. Note the eye, ear, and hand safety protection. (Courtesy, Husqvarna Forest and Garden Company)

- Salesperson—solicits jobs for the company among potential customers, responds to inquiries for services, submits bids, and arranges contracts for services.
- Manager—coordinates all phases of the work and supervises maintenance work in small operations. Assigns crews to specific jobs each day; prepares budgets; hires, trains, fires, retains, and promotes employees; and recommends pay increases.

Herbaceous Plant and Seed Producers

The seed and young herbaceous plants used by amateur and commercial growers of flowers and vegetables are supplied by large operations. These operations specialize in the development of new cultivars and plant propagation. Seed sold by American firms are usually mass produced for them by independent growers on the west coast, Central America, and South America, where growing and harvesting conditions are very favorable for seed production.

The following are occupations for herbaceous plant and seed producers:

- Plant Breeder—specializes in the development of improved cultivars of either flowers or vegetables.
- Propagator—responsible for seed production. Supervises the fields where different varieties are being grown and the rooting of cuttings of species, which have to be propagated vegetatively, to supply new plants.
- Independent Grower—produces the seed crops for a seed firm under a contractual agreement.



2-15. This customer discusses her need for bedding plants with a plant technician. (Courtesy, James Leising, Oklahoma State University)

- Sales Manager—coordinates sales of seeds and plants.
- Salesperson and Dealer—sells to both retail distributors and commercial flower and vegetable growers. A dealer is a locally based salesperson in an area where demand is high. The salesperson performs an educational function for growers by providing current information on cultural practices for various crops.

Garden Center (Retail Nursery)

The ***garden center*** is the retail sector of the nursery industry. It provides consumers with a source for all plant materials and supplies including fertilizers, mulches, chemicals, pesticides, tools, support books, and outdoor furniture. A garden center may be part of an incorporated chain of outlets (regional or local) and be managed by a central administrative office. Policies on buying and pricing plants, advertising, and maintenance of central warehouses for hard goods are established for the entire chain from this office. As the number of outlets increase, the need for district managers is recognized. Examples of occupations in garden centers are:

- Buyer—responsible for locating the sources and purchasing the kinds, quantity, and quality of plants and other products that will satisfy customer needs. Makes necessary contacts with suppliers and arranges delivery. Close coordination with district managers and store managers is needed.
- Landscape Designer—develops and prepares landscape designs for small homeowners. Designs are either standard and inexpensive, or elaborate and expensive, according to specifications of the individual site and customer. Analyzes sites and prepares plans without hesitation.
- Plant Technician—specializes in plant problems. Offers recommendations on landscape practices and requirements of specific plants. In smaller garden centers, the landscape designer and plant technician may be the same individual.
- Manager—administrates and coordinates the entire marketing operation. Plans, budgets, controls, and evaluates each phase of the business, and makes needed operational changes. Supervises all activities in a small operation.

Arboretum, Botanical, and Horticultural Gardens

Many plant collections are available for study by the general public, students, botanists, and horticulturists throughout the United States and abroad. These collections may be found in arboreta and botanical and horticultural gardens.

An ***arboretum*** is a collection of trees arranged in a naturalized fashion. Many arboreta contain shrubs, vines, and flowers throughout the facility. A true ***botanical garden*** is a

plant collection habitat. The ***horticultural garden*** contains an assortment of plants represented by many horticultural varieties, arranged to achieve a desirable aesthetic effect. It is designed as an environment people may frequent to enjoy the color and beauty of the plants, and to provide a place for specific study of plants.

Some botanical gardens, horticultural gardens, and arboreta offer conservatory greenhouses for the display of the more tender plants and plant propagation. Many of them have an educational program and research studies in the plant sciences. A few occupations are:

- Writer—prepares educational materials on horticultural subjects.
- Researcher—conducts selected research projects to determine plant responses for improvement of our environment.
- Propagator—supervises and propagates new plant material for use in garden areas and greenhouses.
- Educational Director—develops and supervises educational programs in botany and horticulture.
- Librarian—establishes and maintains a collection of horticultural books and periodicals for use by the public and in educational programs.
- Director—implements the policies of the organization's board of directors, develops programs within budgetary limitations, and coordinates the activities of the various divisions or groups in the organization.
- Curator—responsible for planning, obtaining, placing, and labeling all plant materials throughout the complex.
- Greenhouse Manager—responsible for maintaining collections of plants in greenhouses, and attractively displaying them for public view.

FLORICULTURE

Floriculture is the cultivation, harvesting, storing, designing, and marketing of flowering plants. Most floriculture employment opportunities involve the growing and distribution of cut flowers, bedding, and pot plants and the marketing of florist supplies. This industry directs production towards major peaks of consumption, such as special holidays (Christmas, Easter, Mother's Day, etc.). The floricultural greenhouse industry is concentrated near large population centers or in regions favored by long growing seasons, winter sunshine, and mild temperatures.

Production

Production deals with growing floral plants and materials. Four occupations are:



2-16. A grower is in charge of floral crop production. (Courtesy, *Greenhouse Product News*)

- Grower—responsible for all the stages of crop production. Trains new workers and serves as supervisor for crop production employees. Large firms may have many growers.
- Production Superintendent—supervises growers and coordinates all production activities. Responsible to the owner for the profitability of the enterprise.
- Marketing Manager—supervises the grading, handling, storage, packaging, and shipment of cut flowers. Programs the sales of cut flowers, responsible for direct sales, and delivery of pot plants to retailers.
- Inventory Controller—schedules the flowering of crops to coincide with the timing of their greatest need and best price. Cooperates closely with marketing manager and growers. Orders supplies and equipment needed for production and marketing.

Wholesale Florist

The wholesale florist merchandises both cut flowers and hard goods. They maintain regular communication with retail flower shops. A few occupations are:

- Manager—responsible for entire operation. After consulting with buyers, makes the decisions involving purchase sources or suppliers to meet the specific demands of retail customers.
- Buyer—investigates potential sources of supplies or producers of cut flowers and hard goods, determines the availability of this supply, and makes recommendations to manager. Keeps in close contact with suppliers and monitors the quality of flowers and supplies being received. Sets up delivery schedule of flowers from suppliers. Individual buyers for large companies may deal only with hard goods or certain flower species.
- Salesperson—markets flowers and supplies to retailers. May specialize in either flowers or supplies.

Retail Florist

The retail florist shop is the common outlet for flowers, houseplants (foliage plants, flowering plants, dish gardens), and terrariums. A large proportion of a florist's income is derived from corsages and floral arrangements for weddings and other special occasions. In some cases, supermarkets and other large stores may have floral departments. Retail florist occupations include:



2-17. A floral designer makes flower arrangements. (Courtesy, Jasper S. Lee)

- Store Manager—responsible for all aspects of the operation and its financial success. In small shops, the manager often handles the special orders, such as weddings and funerals.
- Sales Clerk—must be more knowledgeable than sales clerks in many other retail businesses. Must be able to make immediate suggestions to the customer. In larger shops, the sales clerk may specialize in weddings, funerals, etc.
- Designer—makes various flower arrangements. Must be highly skilled and creative. The most successful designers are artists and are generally paid extremely well.

FRUITS, VEGETABLES, AND NUTS

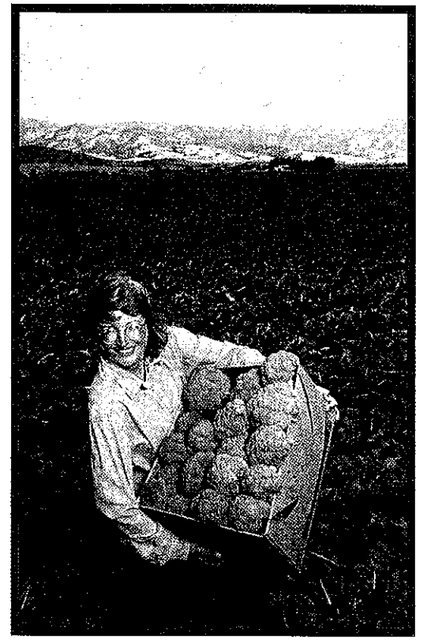
Olericulture is the branch of horticulture dealing with the production, storage, processing, and marketing of vegetables. Pomology is the branch of horticulture science involving fruits and nuts.

Tons of produce are shipped fresh or held in refrigerated storage worldwide. Many additional tons are preserved by canning, freezing, pickling, or drying and are shipped throughout the U.S. and global market. Fruit, vegetable, and nut production, preservation, and distribution are highly mechanized and involve the use of very advanced techniques. Professional horticulturists fulfill responsibilities in both the commercial and residential markets.

Production

Fruit, vegetable, and nut producers vary depending on the nature of the crop, climate, intensity of culture, and the degree of mechanization. Operations vary in size from small to large. A few occupations are:

- Manager—coordinates all stages of production from the selection of varieties and delivery of the harvested crop for packaging to its final shipment. Responsibilities include cost accounting, budgeting, human resource management, and cultural practices.
- Processing Company Field Technician—many of the fruits and vegetables preserved by processors are grown by independent growers under contract. To insure a sufficient supply of fresh products of high quality, the processor utilizes a field technician (similar to agricultural extension agent) in advising the contracted grower of the newer varieties and improved cultural practices.



2-18. This vegetable producer coordinates all stages of production. (Courtesy, Agricultural Research Service, USDA)

Marketing

Considerable effort and money have been invested to improve marketing technology. These improvements include grading and packaging equipment and materials, chemical treatments to reduce spoilage, devices to increase storage life, and methods of shipment. Specialized packing, storage, sales agencies, marketing organizations, and legislation have evolved. Much of this effort requires people with special training in horticulture. Several occupations in fruit and vegetable marketing are:



2-19. A promoter is selling customary foods at this local Japanese market. (Courtesy, Marshall Stewart, North Carolina)

- Sales Agency—private or cooperative organization that handles the sales, grading, storing, and packing of fruits and vegetables for growers.
- Broker—resells wholesale lots of produce bought directly from growers or sales agencies.
- Marketing and Promotional Organizations—active in the promotion of specific fruits or vegetables at the state or national level. Finds new market outlets and promotes the crop. Also, distributes market information to growers.

TURFGRASS (HORTICULTURE AND AGRONOMY)

Sod Production

As the use of turfgrasses increases, sod farms will become increasingly important. More people will be needed in this area. Here are a few occupations in sod production:

- Farm Manager—responsible for producing a marketable, pest-free, non-contaminated commodity. Must be a "people person" and understand budgeting, planning, chemicals, and staffing.
- Assistant Farm Manager—assists the farm manager in fulfilling the responsibilities and meeting the goals of the organization.
- Spray Technician—responsible for planning and implementing all activities involved in spraying chemicals. Must have an understanding of and working knowledge in weeds, insects, diseases, nematodes, equipment, and mathematics.
- Staff Leader—responsible for supervising and assisting labor crews in completing their function in sod production.

Turf Establishment

The establishment of a site with turfgrasses (sod, sprigs, and seed) for their specific purpose (recreation, ornamental, utility, or sports) requires skilled workers. Here are two occupations:

- Construction Superintendent—responsible for preparing a site for its intended use. Must have a working knowledge of people, project, and time management.

- Planting Superintendent—responsible for planting a site with turfgrasses for its intended use. Must have a working knowledge of people, project, and time management.

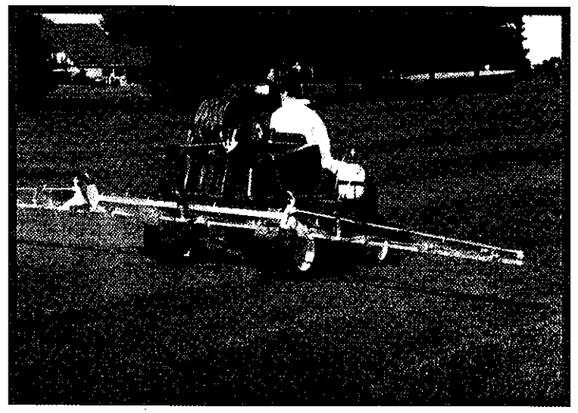
Golf Course Design and Maintenance

As the demand for the game of golf continues to increase, the need for trained and educated personnel to manage and maintain such facilities will grow. Here are several occupations:

- Golf Course Architect—designs golf courses to creatively use features of the site.
- Superintendent—responsible for supervising the construction and maintenance of a golf course, servicing and repairing turf equipment, keeping appropriate records, and preparing budgets and reports.
- Assistant Superintendent—directs and participates in the construction and maintenance of a golf course. Supervises the operation, maintenance, and repair of turf equipment, and performs support tasks.
- Irrigation Technician—responsible for all irrigation systems on the golf course. Must have an understanding of and working knowledge in irrigation installation and repairs. Must be familiar with pumping systems, irrigation lines and heads, controllers, irrigation hydraulics, and electricity.
- Spray Technician—responsible for planning and implementing all activities involved in spraying chemicals on a golf course. Must



2-20. A turf installation contractor is using a low-compaction crawler unrolling large rolls of sod onto a burlap mat over prepared soil. (Courtesy, Woerner Turf, Inc., Alabama)



2-21. A spray technician is using a computer-controlled sprayer at this golf course.

have an understanding of and working knowledge in weeds, insects, diseases, nematodes, equipment, and mathematics.

- Landscape Technician—under supervision, responsible for the care and maintenance of the ornamental plants, shrubs, and trees on the clubhouse grounds and selected golf course sites. Also, operates the equipment needed in performing associated tasks.
- Equipment Operator—under direction, operates motorized equipment and trucks used on the golf course and performs related tasks.
- Equipment Technician—responsible for all golf course equipment maintenance and repair. Must have an understanding of and working knowledge in mechanics, hydraulics, and electricity.

OTHER CAREER AREAS

- Horticulture Therapist—helps heal people with health problems or disabilities. Works with physically or mentally challenged individuals, patients in nursing homes and mental institutions, or with individuals having special educational needs. Therapy projects include growing and propagating house plants; forcing bulbs; making corsages and flower arrangements; flower, vegetable, and fruit gardening; and the construction of dish gardens and terrariums.
- Cooperative Extension Agent or Horticultural Specialist—employed by the Cooperative Extension Service, with offices in local communities and on the college campus. Works with 4-H youth activities; home gardeners in urban areas; or commercial growers, processors, and distributors of horticultural crops. Activities of county extension agents and horticultural specialists are educational. Such activities include disseminating the most recent recommendations of researchers to the people.
- Consultant—works independently, advising individual growers or other groups in the industry on a regular basis.
- Communicator in Horticulture—prepares and presents educational presentations on a regular interval through mass media and garden clubs. Writes articles or columns for newspapers or magazines, or serves as an editor of a garden magazine.
- Teacher—provides instruction in high schools, technical schools, community colleges, two year colleges, universities, arboreta, and public gardens.
- Research Scientist and Technician or Assistant—seeks to improve horticultural crops through plant breeding, or by developing more economical and effective techniques for growing, handling, and marketing horticultural crops. Employed by private industry, state and federal government, arboreta and public gardens, and colleges. May initiate, plan, direct, and conduct research projects.

- Plant Inspector—participates in activities designed to prevent the spread of pests among plants through an inspection service. Polices commercial nurseries, garden centers, and field planting of fruits within their jurisdiction (local, state, or federal) to insure that plants are free of certain pests. Federal plant inspectors concern themselves with plants being shipped from one state or country to another.

  Plant inspection positions are civil service. Entrance into this career is as an inspector in training (trainee). A trainee becomes a plant inspector only after a specified time of satisfactory service and performance.



2-22. Research scientists checking root development. (Courtesy, Agricultural Research Service, USDA)

Foreign Assignments

Numerous opportunities exist for people with horticultural training and education, especially in the developing countries. Global marketing through private organizations employs educated and trained people. Global golf course development is one example of numerous employment opportunities.

REVIEWING

MAIN IDEAS

Horticulture is a rapidly growing industry. Many career opportunities are available in horticulture for those who set realistic goals, get the needed preparation, and seek jobs. A number of the careers are based on experience and educational qualifications. Employees often begin in an entry-level occupation and advance to more responsible positions. Students should identify a specific area and make a plan to obtain the needed education and work experience.

Entrepreneurship is the ownership and management of a business. It involves seeking to meet a market need. Initiative and risk are involved. Most often, a product or service is provided that is not otherwise available. Entrepreneurship plays a very important role in small business and is possible in the United States because of the free enterprise system.

Seeking information, gathering resources, and exploring systems is a part of gaining and maintaining horticultural skills. Good information is often needed to perform well in an occupation. The

most common forms of information are books, bulletins, magazines, newspapers, manuals, and electronic forms, including Web sites and CDs. Sources of information include employers, publishers, agencies, universities, research/test laboratories, industries, and associations. Information should be assessed to determine whether it is appropriate to use. Resources include information, personal contacts within the horticultural industry, and the materials, tools, and equipment needed in the work. "Systems of operation" refers to system dynamics. A system is a set of facts, principles, procedures, and rules arranged in an orderly form linking the various parts. Systems of operation involves using information and resources in the most efficient and effective manner.

Supervised experience is used in high school to prepare young people for successful careers. The activities are planned in advance and related to classroom and laboratory learning. Kinds of experience include exploratory, placement, entrepreneurship, and research/experimentation. A training plan is used to insure that time is used wisely and that job skills are developed. Managing supervised experience begins after it is underway. While conducting and managing SE, learning by doing activities that help develop skills needed to be successful in the workplace or in life and those planned around goals and career plans should be the primary focus. Records are kept of activities, income and expenses, and job skills.

Employers have expectations that employees are to meet. These relate to doing a job well and in a timely manner. Employees must act responsibly and communicate well. They need to have job skills, the ability to get along with other people, and the ability to work as productive team members. Personal skills and good citizenship attributes are also beneficial.

Once an individual has the needed preparation, success begins with getting a job. This involves making an application and having a good interview. Personal skills are important. These include good communication, proper dress, and a strong work ethic. On the job, enthusiasm, honesty, productivity, and the ability to get along with people are very important. This includes the ability to maintain good customer relationships by having a positive, helpful, friendly approach.

Citizenship is the status of being a legal citizen of a nation, with rights and duties. Good citizens have duties and responsibilities. Among the rights of a citizen are the right to vote, the ability to own property, and freedom of speech, religion, and the press. Each of these has certain conditions that protect people and the overall well-being of the nation.

Safety is important in our work. Occupational safety begins by having information and being knowledgeable of potential hazards. Personal protective equipment is used to reduce the likelihood of an injury.

Careers in horticulture can be clustered into four main areas: landscape and nursery production; floriculture; vegetable, fruit, and nut production; and turfgrass. In addition, a number of specialized positions are found that do not fit into one of these clusters, such as horticulture therapists and horticulture teachers. Horticultural careers are becoming more technical and science-based but still require a love of plants.

QUESTIONS

Answer the following questions using complete sentences and correct spelling.

1. What are the three major career areas in horticulture? Briefly explain each.
2. What does a person need in order to make a good choice about a horticulture career?

3. What is the distinction between an occupation and a job?
4. What is a career goal?
5. How is the needed education obtained in horticulture?
6. What is supervised experience? What is the object of supervised experience?
7. What general expectations do employers have of employees?
8. How does a person locate a job?
9. How does a person apply for a job?
10. What are five suggestions in making a job interview?
11. What general safety rules should be followed in our work? List any four.
12. What are the career areas in landscape horticulture?
13. What are the career areas in floriculture?
14. What are the career areas in fruits, vegetables, and nuts?
15. What are the career areas in turfgrass?

EXPLORING

1. Make a list of horticulture businesses in the area. Use the telephone directory to help identify the names of the businesses. Consult an extension agent or horticulture specialist for assistance in this activity. Categorize each business into one of the career areas included in this chapter: landscape horticulture, floriculture, fruits and vegetables, turfgrass, and occupations in education, extension, and research. In some cases, you may have businesses with careers that do not fit into one of these areas. If so, develop your own system for classifying these.

2. Investigate job opportunities in areas of horticulture in your community. Use a variety of sources, including the newspaper, employment offices, Internet postings, interviews with counselors, and visits to human resource offices. Assess which opportunities may match best with your interests and skills. Prepare a report on your findings.

3. Prepare a poster or a bulletin board that depicts a horticulture occupation in the local area. Make photographs and include them in your work.

4. Interview a person who works in horticulture. Determine the nature of their work and the requirements needed for entry. If possible, job shadow them for a day or more. Prepare an oral or written report about your observations.