

The Role of Plant and Horticulture in Human Well-Being and Quality of Life

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Introduction

Horticulture is commonly defined as the cultivation of the garden. However, a broader definition of the Latin term *Hortus cultura* has been encouraged to include all of the translations of these two words, thus defining horticulture as "the art and science of growing flowers, fruits, vegetables, trees and shrub, resulting in the development of the minds and emotions of individuals, the enrichment and health of communities and the integration of the "garden in the breadth of modern civilization" (Relf, 1992).

Today, it is even more important to understand all of the ramifications of the garden and its cultivation on humans. As people experience the progress brought about by technology they are more and more separated from the plants that have surrounded humans throughout all of history and from the cultivation of the garden that has led to the development of civilization.

The role of horticulture in human well-being and the quality of life can be explored in four areas:

- human physical dependency on plants and the impact of plants on our immediate physical environment
- human psycho-physiological responses to the presence of plants around us
- human response to the act of nurturing a garden
- human social interactions and communications impacted by both the presence of plants and the cultivation of plants

Each of these areas represents a unique interaction between humans and plants. Although all of the interactions within each area may not be directly related to horticulture, many are; therefore, horticulture plays an essential role in each area. Figure one is designed to bring focus to the inter-relationships between plants and people and to highlight the role that horticulture plays in this complex system.

1. Physical dependency on plants

First, all humans are dependent on plants for existence (Janick, 1992). Without the oxygen and carbohydrates

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from plants, there would be no animal life. While this is a global consideration not dependent on horticulture, the cultivated crops in horticulture have significant roles to play. The quality of the urban air that is breathed and the fruits and vegetables that are eaten are linked directly to the work of horticulturists. Trees, shrubs, and grasses clean the air of pollutants, such as carbon dioxide, smoke, and dust particles. Research is bringing people closer to an understanding of the role that plants can play as a curative in office spaces in danger of sick building syndrome. Vegetables and fruits are the sources of vitamins and antioxidants used to keep bodies healthy, preventing many diseases such as cancer. Herbs are again becoming an increasingly important source of medicines.

This first area of consideration focuses on the use of the products from plants by humans, primarily for physical growth and health. As Maslow (1973) explained, until human meet their very basic needs for food and shelter, they cannot pursue higher level human needs. This has long been the prominent area of study by horticulturists since the field of study separated itself from botany as a professional area in the late 19th century. It is still considered by some to be the only true horticulture, encompassing pomology, vegetable crop production, viticulture, and, in more recent years, pharmacology.

2. Psycho-physiological response to plants

As humans advanced in civilization and in the ability to provide for their basic needs (in part, through the cultivation of the garden), the desire to make the area around them beautiful became evident. This manifested itself in the development of landscape design, construction and maintenance; areas which have integrated themselves into the profession of horticulture through the route of the production and sale of the tree, shrubs, and flowers needed for the landscape. In many colleges of agriculture, this work with ornamental plants is barely recognized as a legitimate professional agricultural pursuit. However, research by urban foresters and environmental psychologists has provided strong indications that, rather than being a luxury of the rich, the existence of plants in a human's immediate surroundings fills as strong a basic need for good psycho-physiological health as does food

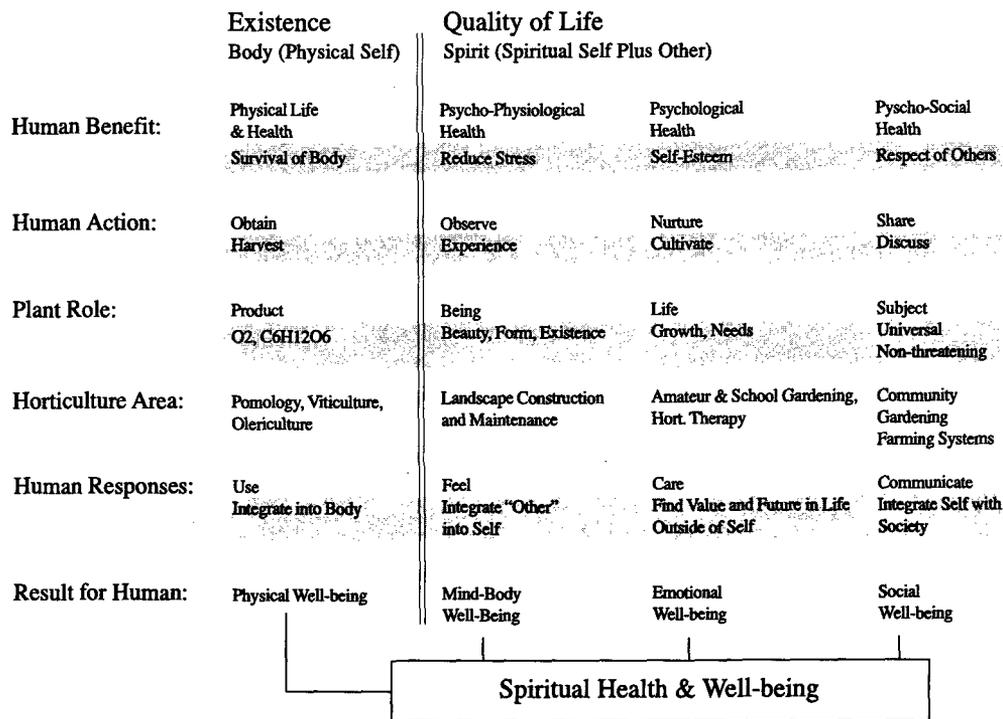


Fig. 1. The role of plants and horticulture in human existence and quality of life

for physical health. The presence of plants in the human environment reduces blood pressure and other signs of stress and reduces anger, fear and feelings of stress while increasing feelings of happiness (Ulrich · Parsons, 1992). The facts that plants are valued by large numbers of people for aesthetics and have positive effects on health and well-being can be seen in their expanded use in interior spaces for customers, tourists and employees. For example, Evans and Malone (1992) found that at Opryland Hotel a one million-dollar annual investment in plants netted a seven million-dollar profit. At the administrative center of the John Deere Corporation, plants and structure are integrated to ensure that no employee is more than 45 feet from vegetation. The leaders of the company report that creativity has been enhanced, productivity increased, and employees voluntarily have upgraded their standard of dress. An explanation of this observed response has not been studied. In addition, in recent years there has been an important movement in hospitals, hospices, and other health-care facilities toward the development of healing landscapes (Lewis, 1978).

There are several theories discussed by Ulrich and Parsons (1992) to explain how and why being around plants can be beneficial. The simplest theories, the overload and arousal theories, maintain that in the modern world, people are bombarded constantly with so much noise, movement, and visual complexity that their surroundings can overwhelm their senses and lead to damaging levels of psychological and physiological excitement.

Environments dominated by plants, on the other hand, are less complex and have patterns that reduce arousal, therefore reducing feelings of stress.

Another theory maintains that people's responses to plants are a result of their early learning experiences or the cultures in which they were raised. According to this theory, people try to return to or reproduce the landscape of their childhood. Those individuals, for example, who grew up in the western United States would have a more positive attitude toward cacti, while someone from a forested area might prefer ferns. This theory could be used to explain why Americans continue to desire broad expanses of lawn that urban water systems cannot readily maintain. However, this theory does not take into account the similarities in responses to nature found among people from different geographical and cultural backgrounds or even those from different historical periods.

The final theory discussed by Ulrich and Parsons (1992) maintains that people's responses to plants are a result of evolution; that is, since humans evolved in environments comprised primarily of plants, they have psychological and physiological responses to them. This evolutionary response is seen in an unlearned tendency to pay attention and respond positively to certain combinations of plants and other natural elements, such as water and stone. The most positive types of responses researchers found have been to the settings resembling those most favorable to survival for early humans. For example, one researcher has linked preference for certain tree forms to

a high probability of finding food and water in nature near similarly shaped trees (Orians, 1986). Balling and Falk (1982) interpret their research with individuals from elementary schools through senior citizens as providing limited support for the hypothesis of an evolutionary preference for savanna-like settings. Another researcher has shown that many features people particularly enjoy in the modern landscape, such as pathways that gently curve into the woods, were important to early man in terms of safety and exploration (Kaplan · Kaplan, 1989). The Kaplans' (1982) evolutionary perspective links settings high in vegetation with intuitively and cognitively based preferences and restorative influences. Ulrich (1983) puts forth a "psycho-evolutionary" perspective that holds that there is an emotional response to nature central to all subsequent thoughts, memory, meaning, and behavior as related to human environments.

3. Nurturing of the life in plants

The act of caring for a plant gives expression to an essential element of humanity; a need to care for and foster a life outside of oneself. As Matsuo (1995) has so eloquently explained, horticulture helps people to live as human beings by providing balance and harmony in their behavior and thoughts, thus bringing to them a "life worth living." This balance is brought through the creative force of fostering that counters the elements of acquiring that have grown disproportionate in modern times. The creative force of acquiring has its origin in the maintenance of the body or the individual and manifests itself in any action that enhances the individual such as reading, seeing a play, buying, harvesting, and collecting. The creative force of fostering originated in the maintenance of the species and can be carried further to include the nurturing of life for a continuity of life beyond oneself. This includes actions such as teaching and caring for a child as well as the maintenance of a garden. Within the profession of horticulture, it is easy for the acquiring of the products of the plant to gain supremacy over the process of nurturing the plant and the balance and harmony of the act to be lost to the economic imperatives.

However, among amateur gardeners, within school gardens, and in horticulture therapy settings, the fascination of the process of nurturing life brings a degree of peace that is hard to find in the electronic pursuits of today. The vast number of people who are seeking to reconnect within nature and find harmony in their lives through the cultivation of plants brings to light the need for opportunities for this type of active participation in horticulture. This,

in turn, indicates a need for information and education to allow individuals who have been isolated by modern culture to find these satisfactions.

Beyond the balance brought by the nurturing of plants, a person observing their growth acquires an understanding of life and the rhythms that maintain it. From plants man derives a sense of what Charles Lewis (1988), retired from the Morton Arboretum, calls dynamic stability through change. Without continuous change, plants could not survive. A plant must flower in order to set seed; it must go dormant to survive the winter. There is a natural rhythm, a time and a season for all things, and nothing can be forced out of its natural order and still survive. One explanation for the positive response that a person has to working with plants may be because it deals with life cycles, and most people make a ready translation between the life cycle of plants and their own human life cycle.

It is not unreasonable to predict the day when a major role of the professional horticulturist will be to lead the novice, both child and adult, into the skills of gardening. University faculty need to expand their vision of the training needed to be a horticulturist from someone who produces a marketable product to someone who understands a process and can share that process with a multitude of people who wish to learn. By increasing the skills, knowledge, and satisfaction to be gained from gardening, the producer of plants will greatly expand his market and will, at the same time, bring greater balance into his own life by fostering a new gardener.

4. Social interaction and plants

According to Charles Lewis (1988), the plant world is non-threatening and nondiscriminatory. It is a universal topic about which conversations can develop. The plant world may be used to establish a nonverbal relationship as it allows one "to enter gently into a relationship with another person in a non-verbal way without the threat of being confronted with interpersonal closeness too soon" (Stamm · Barber, 1978).

According to Stamm and Barber (1978), gardening with others provides the opportunities for emotional growth found in many group settings; "the chance to work as a member of a team, to experience competitive feelings, and to experience group support as well as confrontation. "Horticultural activities can provide the ideal setting for acquiring social skills through cooperative projects that bring a community together, such as building a group garden, or the opportunity to share both an experi-

ence and the results of that experience with someone else, often someone less fortunate than the gardener. Thus, in nurturing the garden, one may also nurture the community.

Working together in the safe environment provided by the garden may help people overcome feelings of helplessness to control their lives or environment. Rules and regulations, or simply a lack of money, may prevent individuals from taking action to make their surroundings better. But in the act of gardening they learn they can change their surroundings, which leads to physical and social improvement beyond the garden. This response has been particularly well recorded in innercity gardening programs that have result in neighborhood clean-up projects as the individuals discover that their actions can change their surroundings (Lewis, 1978).

Conclusion

Horticulture provides opportunities for human relationships by providing common interests and shared experiences. The potential interactions between individuals are limitless as they naturally evolve from a situation and allow individuals opportunities to explore new relationships. In these new relationships, people learn greater respect for themselves and others and become more integral members of society.

Horticulture plays a role not only in people's ability to be alive and to exist as corporal beings, but also in helping to experience and understand the reasons for this existence as they observe, nurture and share the life around them.

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