CHAPTER 21

AGRICULTURE AND HEALTH CARE

The care of plants and animals for therapy and rehabilitation in the United States

PAULA DIANE RELF

Professor Emeritus, Department of Horticulture, Virginia Tech University, Blacksburg, VA 24073-0328, USA

Keywords: horticulture therapy; animal-assisted therapy; service animals; farm therapy

INTRODUCTION

Green Care, Farm Care, Farming for Health, terms that share similar meanings, represent a movement that is gaining momentum throughout Europe, Canada and New Zealand. This movement involves farmers and the health-care community collaborating to provide a healthful environment and economic stability to members of both communities. An integral and essential element of this movement is the responsibility for the care and nurturing of plants and animals in the context of a profitable agricultural business (the farm). This goes beyond the implementation of outdoor experiences that provide nature opportunities without personal responsibility for nature.

In the United States these terms are not in common usage nor is this philosophical approach to a new venue for sustainability of the small family farm apparent. The term 'Green Care' is more often associated with environmentally friendly forms of caring for the landscape, buildings, or anything that requires cleaning or care. 'Farm Care' seems to be used for businesses that focus on maintaining or enhancing the health of the farm. 'Farming for Health' is focused on the production of food that is more nutritious for the consumer; that is, a shift from 'farming for calories' to 'farming for health' (Phytomedics 2004). While the USDA acknowledges that improving human health is "a key component of the future of agriculture", it focuses on the production of food as the domain of agriculture (Welch 2004). Within this context, agriculture is not concerned with providing health-care service for clients in the health-care system, nor providing preventative

Jan Hassink and Majken van Dijk (eds.), Farming for Health, 309-343.

or therapeutic outdoor agricultural opportunities for the non-farming population of the U.S.

From another perspective, members of the modern medical and health-care community (including government bureaucrats) have, until very recently, failed to recognize the negative health impact of severely limiting opportunities for exposure to, or responsibility for, the natural environment by relocating the population from a rural to an urban environment over the last 100 years. Thus, an enormously important segment of agriculture and health care has remained outside of the arena of most government agencies and university scholars.

This attitude on the part of all the branches of the government has greatly limited the research and financial support that has been available to address the overriding issues related to the need to provide exposure to the natural environment to healthy individuals as well as those in treatment. However it has not eliminated the implementation of relevant programs within this area. Although Green Care or Farming for Health in the European model is not evident in the U.S. literature and there are no associations or government agencies giving leadership to such programs, there are a number of activities with relevance that should be explored.

BACKGROUND HISTORY

Agriculture in the United States

A recent CAST (Council for Agriculture Science and Technology) report discusses changes throughout the history of American agriculture. In 1880 the farm population included 21.9 million people, about 44% of the total U.S. population. By 1959, it had decreased to 16.6 million or less than 10% of the population. By 1991, it was 4.6 million or about 1.8% of the total U.S. population. Economists estimate that about 150,000 of America's 2.1 million farms produce 70 percent of the major food crops (Butler and Maronek 2002, p. 21).

The American farm mythology holds that farms are composed of family-owned and operated businesses in rural areas, which are somehow left pure from the corrupting influences of city life. Further, the primary goal of the farmer is to produce food at the lowest possible price to sustain the high quality of life with relatively little investment by American consumers, thus justifying government support of the enterprise. The agriculture community has been successful in this goal; in fact, food spending in U.S. in terms of the percentage of income reached a low of 10.9 % in 1996 (Illinois World Food and Sustainable Agriculture Program 2005), while in poor countries over 50% of income is spent on food (Traill 1999). However this has not been the result of the model that many Americans assume – the small family farm. The average farm size of 487 acres in 1997 was more than triple that in 1900 and more than double that in 1950, which reflects an increased concentration among large corporate farms, whose economies of scale, ability to benefit from farm policy, and productivity rates exceeded those of smaller farms. This transition has been seen most strongly in the areas of relatively low value per acre of agronomic crops and in beef and pork production. Such corporate farms lend themselves better to production models that are focused on technology to increase

productivity and profitability rather than schemes focused on human capital, such as Farming for Health.

Intensive crop production of high-value horticultural crops lends itself to successful production in areas close to the consumer market to better accommodate shipping and marketing. This means that despite widely held beliefs that agriculture in the U.S. is something that happens in the rural Mid-west, metropolitan counties have led other counties in total crop sales for fruits/nuts/berries, nursery/greenhouse, and vegetables/sweet corn/melons as well as total sales for dairy and poultry products and other livestock in the past five censuses (Butler and Maronek 2002, p. 24). In fact, since 1978, metropolitan counties have had the largest average and median number of farms. By 1997, metropolitan counties accounted for over one-half of all agricultural employment compared with non-metropolitan counties (Butler and Maronek 2002, p. 7). The share of metropolitan and adjacent counties was 68.8% of total crop sales compared to 31.2% share of non-adjacent, non-metropolitan counties.

There has been a continuing decline in the number of farms and farm population resulting, in part, from the economic crisis during the 1980s, the more recent restructuring of farm policy and the increased global competition. However, history suggests that because agricultural participants in metropolitan counties/states are closer to larger and more diverse economies, they have an advantage not only of higher per-acre value to crops but also of attaining alternative sources of off-farm employment and entrepreneurial links to consumers. This makes the farms in metropolitan areas suitable for inclusion in Farming for Health programs.

Health care in the United States

Health care in the United States for many years has been strongly directed toward a medical model that assumes that pharmaceuticals and surgery are the primary approach to a long and healthy life. A recent comprehensive paper looked at the history of health care in the United States (Fetter 2004). According to Fetter, the first modern medical school, Johns Hopkins, did not open until 1893, scientific standards of medical education were not generally established until 1910, and the Public Health Service did not emerge as a separate agency until 1912. As compared to European countries, the transformation of U.S. medicine in the early 20th century was extremely slow. In Europe, central government agencies – monarchs, parliaments and universities – played a central role in the establishment of scientific medicine. In the United States, in accordance with the 1787 constitution, states retain sovereignty in all matters not expressly delegated to the central government, thus leaving it with a relatively minor role in health-care policy and direction.

Before the New Deal (1933-45) and the Social Security Act (1935), the major federal-government-led program was to build a network of hospitals for World War I veterans in the 1920s. The Great Depression showed that neither private charities nor state and local governments had the resources to address the needs of the people. The most important step in increasing the federal government's role in health care was the Medicare and Medicaid legislation of 1965. Medicare, which covered

hospital and physician expenses for all citizens over 65, excluded items such as preventive care. Investment in health care has grown significantly since this legislation, with the federal government investing huge sums in medical research. Well-financed university hospitals developed top of the line procedures to treat the acutely ill. By the 1990s, all major elements in American health care were growing simultaneously. The combination of higher pharmaceutical costs, higher hospital costs and increased salary costs strained the resources of all levels of government. By 2001, health costs were consuming 14.1% of the Gross Domestic Product. The public sector, which includes the federal government [31%], the state governments [16%] and tax revenues [10%] now accounts for 57 % of all health costs. This may result in shifts away from the exclusive medical-treatment model, such as legislation recently enacted by Congress, which provides Medicare coverage for preventive procedures. In addition, there is an increase in research funds for alternative medical treatments that include adjunctive therapies such as horticultural therapy and animal-assisted therapy.

Mental healthcare has likewise evolved along a strong medical model focusing on physiological causes of the disorder and pharmaceutical treatments for most diagnoses. In the 17th and 18th centuries, people with mental illnesses were subject to great suffering; viewed as demon-possessed they were subjected to horrific treatment. In the early 1800s institutions for the mentally ill gradually became available. In 1843 there were approximately 24 hospitals – totalling only 2,561 beds – available for treating mental illness (Mental Wellness.com 2005). However, even into the 20th century individuals with mental illnesses were subjected to deplorable treatment. Physical and mental abuse was common with the use of physical restraints – straightjackets and other means of restraint including destructive brain surgery. Truly effective medical treatments for many people were not available until 1952, when the first conventional antipsychotic drug, chlorpromazine, was introduced to treat patients with schizophrenia and other major mental disorders. In the 1960s conventional antipsychotic drugs, such as haloperidol, were first used to control outward (‘positive’) symptoms of psychosis, bringing a significant measure of calm and order to previously chaotic psychiatric wards. Lithium revolutionized the treatment of manic depression. During this period nearly a half million individuals were hospitalized for psychiatric care in the United States. With the control of symptoms, mass deinstitutionalization began. Unfortunately, lack of outpatient programs for rehabilitation and reintegration back into society left many homeless.

By the 1980s rise of managed care – short-stay hospitalization with community treatment became the standard of care for mental illness. Over the next 20 years progress with pharmaceutical treatments (including treatment for schizophrenia and antipsychotic drugs) moved rapidly, along with brain imaging to better understand the development of major mental illnesses and genetic studies indicating that bipolar disorder may be inherited. Concomitant with the increase in pharmaceutical treatment was the decline in all other forms of treatment; thus the closing of many adjunctive-therapy departments and the restructuring or closing of many residential-care hospitals.

Today the settings for care and treatment include institutional, community-based and home-based care (U.S. Department of Health and Human Services 1999). Institutional facilities are generally residential and include public mental hospitals and nursing homes usually seen by patients and families as large, regimented and impersonal. Community-based services are located close to client's residences and may include small group homes, day-care services and outpatient care. Services are typically provided by community agencies and organizations. Home-based services include formal supports such as visiting-nurse care and informal supports such as family members provided in an individual's residence.

Agriculture and health care

Agriculture in some form has played a role in treatment, rehabilitation and/or residential care of individuals with disabilities throughout the last 200 years. During the 1800s as institutionalization became common for those with behaviour problems or other conditions that separated them from the norm, the farm was seen as an integral part of the facility. However in this context, the farm was not intended as treatment but rather as a way for those individuals who could not pay to be at the facility to earn their room and board. Observation of those individuals who were required to work lead to the recognition that staying occupied with responsibilities actually expedited rehabilitation and return to the community. This in turn led to the development of occupational therapy and all subsequent allied activity therapies.

One of the first people to recognize the benefit of labour for patients was Dr. Benjamin Rush, a professor of the Institute of Medicine and Clinical Practice at the University of Pennsylvania noted for his contribution to psychiatry. In his book *Medical Inquiries and Observations Upon Diseases of the Mind*, published in 1812, he reports that "It has been remarked, that the maniacs of the male sex in all hospitals, who assist in cutting wood, making fires, and digging in a garden, and the females who are employed in washing, ironing, and scrubbing floors, often recover, while persons, whose rank exempts them from performing such services, languish away their lives within the walls of the hospital" (Rush 1812).

During the 1800s both private and public psychiatric hospitals included agricultural components. From its opening in 1817 patients at the Friends Asylum for the Insane in Philadelphia were involved in vegetable gardens and fruit-tree planting (Friends Hospital 2000). In 1878 the Pontiac State Hospital in Michigan opened on 300 acres and made extensive use of farming and dairy projects. However, production was the chief goal, and any therapy these patients received was a fortunate by-product (Friends Hospital 2000).

In mid-century increased recognition was being given to progressive ideas on the care of the 'insane'. Dr. Thomas Kirkbride, superintendent of the Pennsylvania Hospital for the Insane and founder of the American Psychiatric Association, wrote in his book *On the Construction, Organization, and General Arrangements of Hospitals For the Insane With Some Remarks on Insanity and Its Treatment*: "The proper custody and treatment of the insane are now recognized as among the duties

which every State owes to its citizens…"; in order to aid recovery he encouraged them to work in the gardens or shops (Kirkbride 1854).

The actual establishment of a farm as a location for therapeutic and rehabilitation efforts has a long and varied history in the United States. One of the earliest such farm-based programs still in existence is the Berkshire Farm Center and Services for Youth, serving troubled children and their families. Started in 1886 on 580 acres in Canaan, New York, it was based on the philosophy that a stable, loving environment, contact with nature and emphasis on a strong work ethic could help 'wayward' boys overcome their past problems and start them on the road to better lives (Berkshire Farm Center and Services For Youth 2003).

Articles published during this period indicate a broad understanding of specific personal benefits to be gained from gardening. It was seen as helping not only mental patients, but also as easing the stressful lives of the urban poor and as an aid in teaching retarded individuals. In 1895, Helen Campbell, city missionary and philanthropist, Col. Thomas W. Knox, author and journalist, and Thomas Byrnes, chief of the New York police and detectives, published *Darkness and Daylight or Lights and Shadows of New York Life* (Campbell et al. 1895). They describe the impact of flowers on the poor, the infirm and prisoners. "Prisoners in the jail, men and women alike, stretch their hands through the bars for them, and there is one woman whose life, to the deep amazement of everybody concerned, has altered utterly under their influence." In *Working Women* (Ihde 2001) her efforts are discussed:

> "Campbell describes in a chapter on Flower Mission work in prisons how 'Long Sal', horror of the city, came closer to reform thanks to the gift of a plant: …Sal tended her geranium with devotion, sending it out regularly by the keeper for air and a sunning. It prospered, and as it grew something grew with it. When Sal's day of release came she looked at the three new leaves on her slip as if each one were a talisman, and the matron said to her: "When you are settled, Sal, and at work again, I will give you another plant". Sal was silent, but as she walked away bearing the precious baby geranium she cast back one look at the matron – an inscrutable look that might mean a fixed intention not to settle down at all, or a dim and undefined resolution to make the plant life a success whatever might come of her own … it stands on record that Sal, though yielding now and then to her old temptation of drink, remained faithful to whatever pledge she had made the geranium, which grows still, a great plant, every leaf cared for to the utmost by the woman who was once the terror of the Ward."

E.R. Johnston cites the use of plants and gardens to enhance healing by mentally handicapped children in 1899 in the Journal of Psycho-Asthenics: "In the garden every sense is alert. How the eye brightens at the masses of gorgeous color and the beautiful outlines – how many things, hot and cool, rough and smooth, hard and soft, and of different forms are to be grasped and held by trembling uncertain hands whose sense of touch is hardly yet awakened" (Johnston 1899). The following year in the same journal, C. Lawrence in a paper *Principles of Education for the Feeble-Minded* discussed the helpful qualities of plants. "Don't talk to the child about numbers he said; but while he is learning to distinguish one flower from another, he will unconsciously learn the number of leaves, petals, etc. And, of course, a very dull child will take pride in having more flowers in his own garden than a playmate has in his" (Lawrence 1900). And in 1919, Dr. C. F. Menninger and his son, Karl,

established the Menninger Foundation in Topeka, Kansas. Fortunately, the Menningers had been brought up in an environment that recognized the values and qualities of plants. From the start, plants, gardening and nature study were integral parts of the patient's activity. Dr. Karl Menninger in later years described horticultural therapy as an activity that "brings the individual close to the soil and close to Mother Nature, close to beauty, close to the inscrutable mystery of growth and development".

Animals were first used in a hospital setting outside of the production farm in the U.S. in 1919. Franklin K. Lane drafted a letter to Dr. W.A. White, superintendent of St. Elizabeth's Hospital in Washington, D.C., suggesting that dogs be introduced as a source of entertainment for the men. Lane had been inspired by the veterans of World War I where "the lonesome boys in France found their dogs a great comfort and men with shell shock recover their balance by getting close to a dog" (Pettit-Crossman 1997).

As early as 1933 Dessa Hartwell wrote: "The curative influence of gardening on suffering humanity is scarcely dreamed of by the world in general. Even workers in the field of occupational therapy have hardly begun to realize the therapeutic effects of working in or with the soil and its products" (Hartwell 1933). And between 1920 and 1940 almost all Occupational Therapy (OT) books mention gardening as an adjunctive program. In 1942 the first horticulture course was taught in an OT program at Milwaukee Downer College, the first college to award a degree in Occupational Therapy (First course in horticulture for therapists 1976).

However, by the 1950s there was a significant shift away from the traditional farm-based institution as it became more cost-effective to purchase food for the kitchens of the facility from corporate agriculture. At the same time we see a vast moving of the population away from rural nature to 'modern' technology-based houses, jobs and lifestyles. Treatment facilities were increasingly based on a medical model targeted at curing symptoms rather than treating the whole patient.

During the 1940s and '50s, the use of plants and animals in treatment facilities becomes the responsibility of volunteers rather than medical professionals. In veterans' hospitals in the mid-1940s, volunteer garden clubs and horticulture-industry members brought flowers and plant-based activities to the hospitals. By the late 1950s Alice Burlingame, trained first as a psychiatric worker and occupational therapist then with degrees in landscape architecture and greenhouse production, worked closely with volunteers from the National Farm and Garden Bureau to establish horticultural-therapy programs. She also taught horticultural-therapy courses for OT externs at Pontiac State Hospital. In 1959, at Dr. Howard Rusk's famed Institute for Rehabilitation Medicine at New York University Medical Center, a horticultural-therapy greenhouse was opened. Sponsored by Mrs. Enid Haupt, the greenhouse was named, Garden of Enid. Recruiting garden staff for support often proved more successful than involving the medical staff. This ultimately led to the recognition of horticultural therapy as a profession. Rhea McCandliss, the chief gardener at an army base in Topeka, Kansas, from 1946-1953 under the direction of Dr. Karl Menninger became *de facto* one of the first professional horticultural therapists when she began working at Menninger Clinic (Relf 2005a).

During World War II, the Army Air Corps convalescent hospital in Pawling, New York, in cooperation with the Red Cross used animal-assisted therapy. Air Corps personnel from all areas of operation needed a regime of restful activity and were encouraged to work on the centre's farm with hogs, cattle, horses and poultry. These activities were discontinued after the war, not for lack of positive results, but as a cost-saving measure (Pettit-Crossman 1997).

In the area of Farming for Health, in 1947 the Ross Family founded Green Chimneys, located in Pelham County, New York. The organization was created as a private school to allow children healing benefits from interaction with farm animals (Green Chimneys 2005). In 1959 the first Camphill program was established in North America. Based on the philosophy that "the path to wholeness involves relationships of mutual respect, education and (or) meaningful work, real participation in community life, including community decision-making, a healing rhythm of daily activities, seasonal celebrations, a rich artistic and cultural life, natural therapies, and acceptance, individual recognition, and dignity for everyone". This path – which is created for all Camphill community residents, not just for those with special needs – is founded in the teachings of Camphill's founder, Dr Karl Koenig and the philosopher who inspired him, Rudolf Steiner (Camphill 2005). Also in 1959 the Colorado Boys Ranch was founded as a home for wayward boys. In response to a need for an alternative to correctional facilities for disadvantaged youngsters needing supervision, affection and guidance, the city of La Junta donated 350 acres including abandoned buildings used for military housing during World War II (Colorado Boys Ranch 2005).

In 1960 the first book of horticultural therapy was published: *Therapy through Horticulture*, written by Dr. Donald Watson and Alice Burlingame (Watson and Burlingame 1960). In 1963, with 6.5 acres of donated surplus land from the Federal Government, parents who had raised their mentally handicapped sons and daughters at home and had no wish to place them in an institution, established the Melwood Agricultural Training Center. Originally United Way dollars contributed almost 100 % of the early years' annual budgets. Based on a new approach for the training and employment Melwood focused on a community-based on-the-job-training model (Wynn 1993).

In 1962, the integration of animal-assisted therapy into clinical psychology was first credited to the child psychologist, Boris Levinson, with his paper published in Mental Hygiene, *The dog as a 'co-therapist'*, reporting significant progress with a disturbed child when Levinson's dog, Jingles, attended therapy sessions. He introduced the term 'pet-facilitated therapy' (Levinson 1962).

Therapeutic riding centres developed throughout Europe, Canada and the United States during the 1960s. Based on earlier work done in Europe, the North American Riding for the Handicapped Association (NARHA) was founded in 1969 to serve as an advisory body to the various 'riding for the disabled' groups. By the 1970s, physical therapists in the United States began to develop treatment uses for the movement of the horse (Ride on St. Louis Inc. 2005).

In 1972, a program between the activity therapy department of the Menninger Foundation and the Horticulture Department of Kansas State University was established to train students undergraduate for the mental health field. This was the

first horticultural-therapy curriculum in the United States. Dr. R. W. Campbell at Kansas State University directed this program. The University of Maryland awarded a Master of Science in Horticulture for work by P.D. Relf in Horticultural Therapy in 1972. In 1973, Clemson University under Dr. Senn offered a graduate degree in horticultural therapy (HT). Also in 1973, Michigan State University started its undergraduate HT option in horticulture, which included 12 weeks of practical training at the Clinton Valley Center, formerly Pontiac State Hospital. In 1976 the University of Maryland awarded the first PhD in Horticultural Therapy to Relf and the next year Virginia Polytechnical Institute and State University started an HT Option in the Horticulture Department (Relf 2005a).

Earl Copus, director of Melwood Horticultural Training Center in Upper Marlboro, Maryland, organized a meeting of 20 people for April 9, 1973, including Dr. Conrad Link and Diane Hefley (Relf), University of Maryland, and Rhea McCandliss, Menninger. This meeting led to the first conference of the National Council for Therapy and Rehabilitation through Horticulture held in November of that year at the National Arboretum and USDA National Agricultural Library. By the end of the meeting, there were 85 paid members with Earl Copus as President and Council headquarters at Melwood, where staff assumed major responsibilities for its administration. The first issue of the newsletter (a mimeograph version) came out in spring of 1974. on January 1, 1975, Diane Relf, Executive Secretary President, moved the Council's office to space at the American Horticultural Society headquarters, River Farm, Mt. Vernon, Virginia, expanded the newsletter to a printed format and initiated the Lecture and Publications Series, hired an office manager for the organization, and led the organization to membership of over 800 (Relf 2005a).

The Delta Foundation (Delta Society 2005a) was established in 1977 in Portland, Oregon, under the leadership of Michael McCulloch, MD. According to their webpage:

> "Delta's founders wanted to understand the quality of the relationship between pet owners, pets, and caregivers, both human and veterinary (hence the 'delta' name based on this triangle). At that time, pets were widely considered luxury or throwaway items, not of central importance to individual health and well-being. Delta's early years focused on funding the first credible research on why animals are important to the general population and specifically how they affect health and well-being. Early Delta members were primarily from the veterinary and human health professions and from university faculties. Once the importance of animals in everyday lives was established from this research, Delta began to look at how animals can change the lives of people who are ill and disabled. In the late 1980s, Delta began creating educational materials to apply the scientific information in everyday life. Membership expanded to pet owners and a broader general public. In the 1990s, Delta built on its scientific and educational base to provide direct services at the local level. This includes providing the first comprehensive training in animal-assisted activities and therapy to volunteers and health-care professionals. A significant advance was the development of the Standards of Practice in Animal-Assisted Activities and Animal-Assisted Therapy, which provides guidance in the administrative structure of AAA/T programs, including animal selection, personnel training, treatment plan development, documentation and more. Use of the Standards of Practice in Animal-Assisted Activities and Animal-Assisted Therapy provides a sound base on which to build quality AAA/T programs."

In 1987, American and Canadian therapists went to Germany to study classic hippotherapy leading to the National Hippotherapy Curriculum Development Committee which undertook development of standardized curricula on hippotherapy (Ride on St. Louis Inc. 2005). In 1992, the American Hippotherapy Association (AHA) (American Hippotherapy Association 2003)was formed. It established therapist registration and set standards of practice for hippotherapy. In 1999 The American Hippotherapy Certification Board was established and the first Hippotherapy Clinical Specialist (HPCS) examination was administered.

The People–Plant Council (PPC) was formed as a result of the interdisciplinary symposium *The Role of Horticulture in Human Well-Being and Social Development*, held in 1990 in Washington, D.C (People-Plant Council 2005). Since then a biennial multi-day symposium hosted by a university or botanic garden has been held to provide a forum on people–plant topics for researchers and practitioners in this interdisciplinary science. The mission of the PPC is to encourage and facilitate scientific research to document and communicate the effect that plants and horticulture have on human well-being and improved life quality. Its goal is to increase among all professional horticultural associations the inclusion of human issues in horticultural research as a segment of their mission. The PPC is not a membership organization, rather a link or affiliation between organizations that facilitates and promotes communication, research and public awareness on the psychological, sociological, physiological, economic and environmental effects of plants on people (Relf et al. 2004).

Linked to this whole area is the concept of designing a landscape for its therapeutic and treatment potential. The Therapeutic Landscapes Resource Center is a not-for-profit organization started in 2000 and dedicated to providing information to the public about restorative landscapes, healing landscapes, therapeutic gardens, healing gardens, wellness gardens and other research-based healthcare design (Therapeutic Landscapes Resource Center 2000). The Therapeutic Landscapes Database provides web-based information and creates a forum for discussion about therapeutic landscapes. You do not have to register or pay a fee to use the website. The American Society of Landscape Architects Professional Interest Group for Therapeutic Garden Design also hosts a website with an active list serve for discussions related to therapeutic landscapes (American Society for Landscape Architecture (ASLA) 2005).

NUMBER AND DIVERSITY OF AGRICULTURE AND HEALTH CARE PROGRAMS

From the above discussion it is clear that programs related to Farming for Health are beneficial for individuals in treatment or rehabilitation. These programs can be divided into several categories:

- Programs that utilize plants:
    - Horticultural therapy (horticulture therapy, garden therapy)
    - Healing landscapes (therapeutic landscapes, meditation gardens)
- Programs that utilize animals

  - Animal-assisted activity
  - Animal-assisted therapy (pet-assisted therapy (PAT))
  - Hippotherapy (horseback riding therapy)
  - Service animals
- Programs that utilize the farm setting with both plants and animals
  - Therapeutic or treatment farms
  - Business farms with special-needs clients as part of the economics.

Based on the diversity of target audiences, goals, activities, staffing/volunteering approaches and intensity of integration of the element into the program it would be logical to estimate the numbers in the hundreds of thousands for the first two but relatively few for the later (farming). To provide an overall picture of programming in this area, I will address common questions.

Who are the program clientele?

It can be hypothesized, without fear of overstatement, that among any population of individuals in organized treatment programs some are involved in either horticultural therapy or animal-assisted therapy or both. Currently it would appear from the literature and on-line information that the greatest focus for these two programs is among the aging population. However, animal-assisted therapy continues to grow rapidly in rehabilitation for physically and visually impaired individuals, and horticultural therapy is expanding among programs for youth-at-risk. Although horticultural therapy had its origin in programs for psychiatric patients and developmentally disabled individuals, shifts in treatment for these populations has altered the way therapeutic and rehabilitative programs are provided and thus how horticultural therapy is implemented. Psychiatric patients are treated with drug intervention and outpatient talk therapy, severely limiting the adjunct therapies previously used. Likewise, the inclusion of developmentally disabled youth in the general classroom has reduced the amount of programming targeted directly at meeting their needs. However, changes in the way that rehabilitation and therapeutic services are offered has occurred concurrently with new types of programs being developed. There are treatment programs to address physical, mental, psychological, social or spiritual needs. Treatment audiences include: individuals with AIDS, cancer or other health issues, acquired or genetic physical and developmental disabilities, dementia and Alzheimer's disease, brain injuries, chronic pain, substance-abuse problems and learning disabilities, adults and children with psychiatric disorders, mental retardation and developmental disabilities, speech and hearing impairments, physical disabilities and neurological impairments. Work with plants and animals is often part of these treatment programs.

Where are programs conducted?

The physical location of the plant/animal program is determined by its relationship to other programs in the facility.

Following are typical sites:

- Part of existing therapeutic program, offered in the same approximate location as the sponsoring therapy; i.e. a windowsill or patio garden as part of an OT Department, pet therapy in the activity room at a nursing home.
- A separate facility at a treatment setting but retaining identity with an established department; i.e., the vegetable farm as part of the work-therapy program in a prison, a greenhouse as part of vocational rehabilitation at a Veterans Hospital, rooftop gardens as part of physical therapy (PT) at a physical rehabilitation centre. An increasing number of health-care facilities also have large HT programs that employ one or more fulltime horticultural therapists and have extended volunteer and educational programs. One example is the Enid A. Haupt Glass Garden Program at the Rusk Institute for Rehabilitation Medicine (Rusk Institute for Rehabilitation Medicine 2005).
- Part of a larger, broad-based public facility established to work separately and specifically with health-care professionals and their clientele; i.e. animal-food gardens at a zoo with developmentally disabled clients, enabled gardens at a botanic garden, a school garden also used by the counsellor.
- Part of a private facility that has expanded its role to meet the health-care need of a target population, i.e. the greenhouse at a National Historic House that provides a training site for developmentally disabled clients of a local sheltered workshop.
- Public (universities, state agencies, parks) or private (corporation, developments) grounds that are maintained through contractual arrangements with a rehabilitation program or sheltered workshop.
- Treatment facilities affiliated with non-profit organizations developed specifically to provide plant- and/or animal-based programming to a targeted group (i.e. greenhouse operation established for treatment and employment of head-injured clientele, vocational horticulture programs for developmentally disabled).
- Treatment and/or employment facilities affiliated with for-profit business (i.e. horse farm, Community-Supported Agriculture farm for developmentally disabled).

Among the settings in which these forms of therapy may be offered are: services in psychiatric treatment centres, outpatient clinics, community mental-health centres, drug and alcohol programs, half-way houses, medical hospitals, senior centres, schools, psychiatric hospitals, community mental-health agencies, rehabilitation centres, day-care facilities, nursing homes, inpatient psychiatric unit, nursing home, state institution, geriatric facility, inpatient medical unit, group home, correctional facility, hospice, agencies serving individuals with emotional, developmental or physical disabilities, oncology treatment centres, pain/stress management clinics, and in special education settings where they provide either direct services to students with disabilities or function as consultants for special educators.

Who conducts programs?

Practicing horticultural therapists offer full-time services in many of the settings mentioned above; however, most programs in horticultural therapy (and as well as in

pet-assisted therapy) are conducted by allied professionals. These professionals include: physical, occupational, activity or recreational therapists; nurses, medical doctors, Doctors of Osteopathy; teachers; vocational rehabilitation specialists; prison guards, probation officers; and many other professionals in the health-care and special-services arena who have recognized the value of plants and animals to their clientele. And HT and PAT programs are usually part of a larger program and may have little or no budget or facility. Generally they are very limited in scale and dependent on volunteers for successful implementation and growth.

What are the program goals?

The specific goals of the plant- or animal-based activity are dependent on the agencies' over-riding goals. Because of the wide range of programs and facilities utilizing these activities it is useful to provide a framework for considering them.

Table 1. *Overview of programmes with plant- or animal-based activities*

Non-treatment – unstructured or undefined	
Preventative	Participation in the program will reduce the potential for future health-related problems.
Recreational	Participation in the program will intrinsically increase quality of life.

Treatment – written, measurable goals for an individual with a diagnosed problem in a treatment setting addressing that problem	
Curative	The individual is expected to overcome the problem completely and return to a life similar to prior to treatment.
Rehabilitation	The individual is expected to improve with treatment and maintain a quality life outside of treatment setting with a maximum level of functioning or to gain control through medication or behaviour modification that allows maximum functioning.
Supportive	The individual is expected to function semi-independently with support in employment and/or daily life activities.
Enrichment	The individual is expected to respond to treatment with an improved quality of life within the treatment setting.

Often volunteer-led programs, while in a treatment setting, are of the non-treatment type, which is not to infer that they are not an important addition to the quality life of the individuals involved. However, the treatment-based programs are designed for/by professionals to enable third-party payment (insurance, government agencies) for services rendered or to justify direct out-of-pocket payment by the client.

The goals of programs, which should include both long- and short-term goals, are sometimes stated in nebulous terms such as improved health, happiness, well-being or quality of life. For treatment purposes they must be further clarified and measurable. While those in the health-care field utilize more technical terms for goals, the actual plant/animal-based program goals and can be divided into in the following areas:

- Physical – positively influences the function of the body's systems or the body as a whole, from building muscular strength to movement rhythms; from weight loss to fine motor skills. (For example, the horse's walk provides sensory input through movement, which is variable, rhythmic and repetitive.)
- Intellectual – positively influences knowledge, skill development, memory, thought organization, verbalization, etc.
- Social – enhanced interaction with other individuals for stronger bonding to individuals and community. This may be as simple as increased eye contact or time spent in the presences of others.
- Psychological – improving the emotional response to our immediate environment and perceived conditions. This may take different forms including psycho-physiological (measurable by the body's response such as lower blood pressure in response to lower stress), psycho-social (self-reported measurements such as reduced feelings of anger after viewing plants) or psycho-cognitive (observation increased attention to task in presences of plants).
- Spiritual/philosophical – enhanced perception regarding the value and meaning of life.

What activities are used?

The activities that are used in effective programs are as varied as the participants, facilities and professionals conducting the program. Within horticulture-based programs both food and non-food crops are used extensively. Size and intensity can range from making cuttings of indoor plants to running large greenhouse operations; from tomato container gardens to market gardens; from pulling a few weeds to contractual landscape maintenance of large facility grounds. In general, animal-assisted therapy is conducted on a small scale with either a staff member caring for the facility cat/dog or bringing in their personal pet; trained and certified volunteers bring in their certified cat or dog; or the individual clients visiting a facility where they can have interaction with the animal. Other types of small animals including rabbits, ducks and chickens, may be used in specific programs. The clear difference with the animals in these types of programs compared to the farm programs is that they are treated as non-production animals. Hippotherapy focuses on actually riding the horse and requires space for the animals as well as the clients. Farm programs often have vegetable gardens and large animals (cows, goats, llamas) as well as small ones. While some may be treated as pets, production and marketing for both crops and livestock is an integral part of what occurs.

It is useful to consider the activities in terms of the level of responsibility the client has for the life of the plant or animal in seeking to understand the nature and cause of benefits that may be gained:

- Milieu – the plants and/or animals present a setting that is intrinsically therapeutic but is completely cared for by others; i.e. Wandering Garden for Alzheimer patients.
- Responsive – the plants and/or animals are responsive to the individuals in the treatment program but completely dependent on others for care; i.e. visiting pet
- Responsible – the plants and/or animals are in danger of being harmed or dying if the client does not fulfil his/her duties in nurturing the life in his/her care; properly making cuttings, watering plants, feeding the animal on a schedule.
- Consumer – the products and/or by-products of the plant and/or animal are used in treatment programs such as cooking, crafts, shows and demonstrations, etc.

Some individuals may only experience one level of responsibility within a program while others may experience several levels. This may influence results, in terms of meeting the goals of a specific activity; for example someone working in the greenhouse making a dried-flower picture from flowers they helped grow, harvest and dry may respond differently to the activity as compared with someone working in a windowless hospital room with flowers purchased and donated by a stranger.

How are programs funded?

The size, goals and staffing create the framework for how programs are funded. Small integrated programs are usually funded through the existing budget of the facility or donations (often in-kind in the form of supplies) from volunteers, local businesses or family of participants. As programs increase in size (and thus costs) local foundations and other charitable organizations have an increasingly important role in funding. In addition, self-generated revenues through sale of products (produce, houseplants, etc.) or services (grounds maintenance) begin to be anticipated. When the program is a reportable part of the treatment plan for the client, funding sources expand significantly. Start-up funds and capitol improvements (building a greenhouse or a riding rink) are frequently one-time grants either from foundations or government agencies (local, state, regional or national) that serve the needs of the clients in the program. Or they may take the form of low-interest, government-sponsored loans. Operational expenses are largely fee-for-service-to-clients from appropriate private (insurance) or government sources. Clients may be receiving treatment funding from one or more agencies at all levels of government (local to national) such as vocational rehabilitation, public education, Medicaid, etc. In addition, a significant portion of daily expenses at many programs is covered by contributions and/or by business endeavours. Contributions take the form of cash donations, materials and supplies, facility space, and volunteer/expertise time. Business endeavours are significantly larger and more structured than those previously mentioned. For examples of such businesses see the last section of this paper.

Healing landscapes

The number of healing landscapes is difficult to approximate, as such gardens could exist in any of the health-care or human-service facilities in the U.S. In addition, as most communities have laws requiring some form of landscaping as part of their overall building code, it is possible that claims may be made for 'healing landscape' that in fact represent a poorly planned landscape that is anything but healing. The purpose of the healing landscape is to provide a location for communion with nature but not for responsible interaction. A healing landscape does not require the presence of professional staff to interact with the client. Designs based on research and teachings of the leaders in the field (Sam Bass Warner, Claire Cooper Marcus, David Kamp) are building a strong discipline, and a significant amount of information is rapidly becoming available to support the use of such landscapes (American Society for Landscape Architecture (ASLA) 2005).

Terminology regarding the landscape in health care is not clearly defined but divisions and definitions have been put forward for consideration (Relf 2005b).

FUTURE TRENDS AND CHALLENGES

Despite the limited official recognition at this time, the potential for growth in the field of Agriculture and Health Care (care of plants and animals for therapy and rehabilitation) in the United States is quite positive. Organizations for networking and professional development exist in both the areas of plant and animal care as it relates to health care (Appendix I). There are many resources for education and training for professionals and volunteers (Appendix II). Arboreta and botanic gardens are taking leadership roles as well in program development and training (Appendix III). A number of USDA programs could easily be expanded to meet the needs of individuals working in this area (Appendix IV). In addition, throughout the United States there are many examples of highly successful programs (Appendix V) that can serve as models and inspiration.

However, one factor that has not been taken into consideration in this discussion and that may have a significant negative influence on implementation of a model in which clients of health-care programs are integrated in working farms that are expected to be self-supporting from the agriculture-commodities perspective, is the enormous potential cost of liability insurance. The few members of our society who hold the right to sue above the right to buy lottery tickets cause others to be extremely cautious about exposing themselves, their home and their livelihood to the public. Opening a farm to individuals with such significant disabilities that they cannot live on their own and become part of society-at-large maybe seen as highly risky by America's small family farmers. Unless adequate safeguards are in place to ensure that farmers are not at risk to lose their farm to a lawsuit to compensate someone when "a disabled family member is traumatized by the threat of being licked by a cow", in the U.S. the Agriculture and Healthcare model is likely to evolve differently from the European model.

REFERENCES

4-H, 2005. *Homepage*. Available: [http://www.4-h.org/] (8 February 2005).

4-H USA, 2005. *Homepage*. Available: [http://www.4h-usa.org/] (8 February 2005).

AgrAbility Project, 2005. *Homepage*. Available: [http://www.agrabilityproject.org] (17 February 2005).

Agriculture in the Classroom, 2005. *Homepage*. Available: [http://www.agclassroom.org] (8 February 2005).

Alternative Farming Systems Information Center, 1999. *Defining Community Supported Agriculture (CSA)*. Available: [http://www.nal.usda.gov/afsic/csa/csadef.htm] (4 February 2005).

American Association of Botanical Gardens and Arboreta, 2005. *Homepage*. Available: [http://www.aabga.org] (3 February 2005).

American Community Gardening Association (ACGA), 2004. *Homepage*. Available: [http://www.communitygarden.org] (3 February 2005).

American Hippotherapy Association, 2003. *Homepage*. Available: [http://www.americanhippotherapyassociation.org/index.htm] (28 January 2005).

American Horticultural Society, 2005. *Homepage*. Available: [http://www.ahs.org] (3 February 2005).

American Horticultural Therapy Association (AHTA), 2005a. *Education and training in horticultural therapy*. Available: [http://www.ahta.org/education] (3 February 2005).

American Horticultural Therapy Association (AHTA), 2005b. *Homepage*. Available: [http://www.ahta.org] (3 February 2005).

American Society For Horticultural Science (ASHS), 2005. *Homepage*. Available: [http://www.ashs.org] (3 February 2005).

American Society for Landscape Architecture (ASLA), 2005. *Therapeutic garden design*. Available: [http://host.asla.org/groups/tgdpigroup/] (31 January 2005).

Berkshire Farm Center and Services For Youth, 2003. *Homepage*. Available: [http://www.berkshirefarm.org] (28 January 2005).

Butler, L.M. and Maronek, D.M., 2002. *Urban and agricultural communities: opportunities for common ground*. Council for Agricultural Science and Technology, Ames. Task Force Report no. 138.

Campbell, H., Knox, T. and Byrnes, T., 1895. *Darkness and daylight or lights and shadows of New York life*. A.D. Worthington & CO., Hartford.

Camphill, 2005. *Homepage*. Available: [http://www.camphill.org] (28 January 2005).

Chandler, C., 2001. *Animal-assisted therapy in counseling and school settings. ERIC/CASS Digest*. Available: [http://www.ericdigests.org/2002-3/animal.htm] (10 February 2005).

Chicago Botanic Garden, 2004a. *Healthcare garden design certificate of merit program (HGD)*. Available: [http://www.chicagobotanic.org/certificate/hgd.html] (3 February 2005).

Chicago Botanic Garden, 2004b. *Horticultural therapy*. Available: [http://www.chicagobotanic.org/therapy/HortTherapyatGarden.html] (3 February 2005).

Chicago Botanic Garden, 2004c. *Horticultural therapy certificate program*. Available: [http://www.chicagobotanic.org/certificate/htcert/] (3 February 2005).

City Farmer, 2005. *Homepage. Urban agriculture notes*. Available: [http://www.cityfarmer.org] (4 February 2005).

Colorado Boys Ranch, 2005. *About CBR youth connect*. Available: [http://www.coloradoboysranch.org/cbrWeb/site/content.aspx?tabid=1] (28 January 2005).

Community Food Security Coalition (CFSC), 2005. *Homepage*. Available: [http://www.foodsecurity.org] (4 February 2005).

Cooperative State Research Education and Extension Service (CSREES), 2005a. *The children, youth and families at risk (CYFAR) conference*. Available: [http://www.csrees.usda.gov/nea/family/cyfar/announcement.html] (8 February 2005).

Cooperative State Research Education and Extension Service (CSREES), 2005b. *Homepage*. Available: [http://www.csrees.usda.gov] (17 February 2005).

Cooperative State Research Education and Extension Service (CSREES), 2005c. *Horticulture: transition from other crops to horticultural crops*. Available: [http://www.csrees.usda.gov/nea/plants/in_focus/hort_if_transition.html] (8 February 2005).

Crossroads Group Home, 2002. *Homepage*. Available: [http://www.crossroadsgrouphome.com/2002/index.htm] (8 February 2005).

Dawn Farm, 2005. *Information for prospective residents and their families* (http://www.dawnfarm.org/info_residential.html
8 February 2005).
Delta Society, 2005a. *About Delta Society*. Available: [http://www.deltasociety.org/AboutAboutAbout.htm] (28 January 2005).
Delta Society, 2005b. *Education and careers in Animal-Assisted Activities & Animal-Assisted Therapy*. Available: [http://www.deltasociety.org/AnimalsResourcesEducation.htm#education] (3 February 2005).
Delta Society, 2005c. *Homepage*. Available: [http://www.deltasociety.org] (3 February 2005).
Delta Society, 2005d. *National service dog center*. Available: [http://www.deltasociety.org/ServiceInformationNsdc.htm] (3 February 2005).
Delta Society, 2005e. *Pet partners program*. Available: [http://www.deltasociety.org/VolunteerAboutAbout.htm] (3 February 2005).
Dog-Play, 2003. *Pets in prisons and rehabilitation programs*. Available: [http://www.dog-play.com/program.html] (3 February 2005).
Dog-Play, 2004. *Homepage*. Available: [http://www.dog-play.com/] (3 February 2005).
Dorn, S. and Relf, P.D., 2001. Assessing the Virginia cooperative extension master gardener coordinator manual. *HortTechnology*, 11 (3), 472-476.
Fetter, B., 2004. Health care and social change in the United States: a mixed system, a mixed blessing. *Hygiea Internationalis*, 4 (4), 277-298. [http://www.ep.liu.se/ej/hygiea/ra/028/paper.pdf]
First course in horticulture for therapists, 1976. *HortScience*, 11 (3), 179.
Friends Hospital, 2000. *Healing with plants: the wonders of horticultural therapy*. Available: [http://www.friendshospitalonline.org/hortherapy.htm] (28 January 2005).
Gambrel Farm, 2003. *Homepage*. Available: [http://www.gambrelfarm.com] (8 February 2005).
Garden Club of Georgia Inc., 2005. *Homepage*. Available: [http://www.uga.edu/gardenclub/] (3 February 2005).
Gardeners of America, 2004. *Homepage. Men's Garden Club of America*. Available: [http://www.tgoa-mgca.org] (3 February 2005).
Green Chimneys, 2005. *Homepage*. Available: [http://www.greenchimneys.org/] (28 January 2005).
Hartwell, D., 1933. Landscape gardening and floriculture as occupational therapy. *Occupational Therapy and Rehabilitation*, 12 (1), 47-55.
Holden Arboretum, 2005. *The Holden Arboretum Horticultural Therapy Program*. Available: [http://www.holdenarb.org/hortth.htm] (3 February 2005).
Horticultural Therapy Institute, 2005. *Horticultural Therapy Certificate*. Available: [http://www.htinstitute.org/classes.htm] (3 February 2005).
Ihde, J., 2001. *Working women. Department of Special Collections, Memorial Library, University of Wisconsin-Madison*. Available: [http://www.library.wisc.edu/libraries/SpecialCollections/womennature/sectionpages/workingwomen.html] (28 January 2005).
Illinois World Food and Sustainable Agriculture Program, 2005. *FAQs: 3. What is the link between income growth and food consumption*. Available: [http://web.aces.uiuc.edu/faq/faq.pdl?project_id=2&faq_id=369] (27 January 2005).
Johnston, E.R., 1899. The value of sense training in nature study. *Journal of Psycho-Asthenics*, 4 (3), 213-217.
Kidsgardening.com, 2003. *Homepage*. Available: [http://www.kidsgardening.com] (3 February 2005).
Kirkbride, J., 1854. *On the construction, organization, and general arrangements of hospitals for the insane with some remarks on insanity and its treatment*. Available: [http://uchs.net/HistoricDistricts/kirkbride.html] (28 January 2005).
Lawrence, C., 1900. Principles of education for the feeble-minded. *Journal of Psycho-Asthenics*, 31, 210-218.
Levinson, B.M., 1962. The dog as co-therapist. *Mental Hygiene*, 46, 59-65.
Melwood, 2003a. *Homepage*. Available: [http://www.melwood.com] (8 February 2005).
Melwood, 2003b. *Melwood's landscape and horticultural services*. Available: [http://www.melwood.com/business/grounds.htm] (8 February 2005).
Mental Wellness.com, 2005. *Mental health*. Available: [http://www.mentalwellness.com/html/mw/pd_mentalhealth.xml?article=history.jspf] (27 January 2005).
Meristem, 2002. *Homepage*. Available: [http://www.meristem.org] (3 February 2005).
Moody Gardens, 2005a. *Homepage*. Available: [http://www.moodygardens.com] (8 February 2005).

Moody Gardens, 2005b. *Hope therapy*. Available: [http://www.moodygardens.com/hope-therapy.html] (8 February 2005).
Municipal Research and Services Center of Washington (MRSC), 2005. *Community gardens.* Available: [http://www.mrsc.org/subjects/parks/ComGarden.aspx] (4 February 2005).
Nagai, P., 2004. *USDA grant will benefit UW-Extension urban horticulture programs 1/3/2003.* Available: [http://www.uwex.edu/news/story.cfm/549] (4 February 2005).
NARHA, 2005. *Homepage. North American Riding for the Handicapped Association*. Available: [http://www.narha.org] (3 February 2005).
National Gardening Association, 2005. *Homepage*. Available: [http://assoc.garden.org] (3 February 2005).
New York Botanic Garden, 2005. *Continuing education: horticultural therapy courses.* Available: [http://www.nybg.org/edu/conted/fa04wi05/horticulturaltherapy.html] (3 February 2005).
Norfolk Botanical Garden, 2005. *What is H.E.L.P.?* Available: [http://www.nbgs.org/education/help/index.shtml] (3 February 2005).
North Carolina Botanical Garden, 2005. *Horticultural therapy program*. Available: [http://www.ncbg.unc.edu/Hort_Therapy.html] (3 February 2005).
People-Plant Council, 2005. *Homepage. People-Plant Council: linking horticulture with human well-being*. Available: [http://www.hort.vt.edu/human/PPC.html] (31 January 2005).
Pettit-Crossman, S., 1997. A helpful history of therapeutic animals. *Abilities* (32), 24-26. [http://www.abilities.ca/include/article.php?pid=&cid=&subid=&aid=412]
Phytomedics, 2004. *Homepage*. Available: [http://www.phytomedics.com] (27 January 2005).
Red Wiggler Community Farm, 2005. *Homepage*. Available: [http://www.redwiggler.org] (8 February 2005).
Relf, P.D., 2005a. Unpublished Report. Department of Horticulture, Virginia Tech University, Blacksburg.
Relf, P.D., 2005b. The therapeutic values of plants. *Pediatric Rehabilitation*, 8 (3), 235-237.
Relf, P.D., Shoemaker, C.A. and Matsuo, E., 2004. The evolution of the People-Plant Council: an assessment of the first twelve years. *In:* Relf, D. and Kwack, B.H. eds. *Proceedings of the XXVI international horticultural congress: expanding roles for horticulture in improving human well-being and life quality, Toronto, Canada, 11-17 August 2002*. ISHS, Leuven, 89-96. ISHS Acta Horticulturae no. 639.
Ride on St. Louis Inc., 2005. *History of therapeutic riding*. Available: [http://www.discoverkimmswick.com/history_of_therapeutic_riding.htm] (28 January 2005).
Rush, B., 1812. *Medical inquiries and observations upon diseases of the mind*. Kimber & Richardson, Philadelphia. [http://deila.dickinson.edu/theirownwords/title/0034.htm]
Rusk Institute for Rehabilitation Medicine, 2005. *Enid A. Haupt Glass Gardens*. Available: [http://www.med.nyu.edu/rusk/glassgardens/index.html] (31 January 2005).
Shiloh Project, 2005. *Homepage*. Available: [http://www.shilohproject.org] (8 February 2005).
Small Farms@USDA, 2005. *Homepage*. Available: [http://www.usda.gov/oce/smallfarm/] (3 February 2005).
Therapet Animal Assisted Therapy Foundation, 2003. *Homepage. Animal assisted therapy: healing through touch THERAPET*. Available: [http://www.therapet.com/] (3 February 2005).
Therapeutic Landscapes Resource Center, 2000. *Homepage. Therapeutic Landscapes database*. Available: [http://www.healinglandscapes.org/] (31 January 2005).
Traill, W.B., 1999. Prospects for the future: nutritional, environmental and sustainable food production considerations - changes in cultural and consumer habits. *In: Conference on international food trade beyond 2000: science-based decisions, harmonization, equivalence and mutual recognition, Melbourne, Australia, 11-15 October 1999.* [http://www.fao.org/docrep/meeting/X2697e.htm]
Tranquility Farm, 2005. *Homepage. Tranquility Farm: Equestrian Education and Renewal Center, Inc.* Available: [http://www.tranquilityfarmequestrian.com/] (8 February 2005).
U.S. Department of Health and Human Services, 1999. An overview of mental health services. *In:* Services, U.S.D.o.H.a.H. ed. *Mental health: a report of the Surgeon General—executive summary*. U.S. Department of Health and Human Services, Rockville. [http://www.surgeongeneral.gov/library/mentalhealth/chapter2/sec7.html]
Urban Community Gardens, 2005. *Homepage*. Available: [http://www.mindspring.com/~communitygardens/index.html] (4 February 2005).

Urban Meadows, 2005. *Mental illness Homepage*. Available: [http://www.urbanmeadows.org/indexmi.html] (8 February 2005).

USDA, 1998. *USDA awards $250,000 in environmental grants to D.C. community organizations*. Available: [http://www.usda.gov/news/releases/1998/02/0058] (4 February 2005).

Van Cleef, L., 2001. *The power of gardening: horticulture therapy at Log Cabin Boys Ranch*. Available: [http://www.sfgate.com/cgi-bin/article.cgi?file=/gate/archive/2001/05/09/green.DTL] (17 February 2005).

Virginia 4-H, 2005. *On-line youth horticulture resources*. Available: [http://www.ext.vt.edu/resources/4h/4hyouthhort/index.html] (8 February 2005).

Virginia Cooperative Extension Master Gardeners, 2005. *Homepage. Virginia Master Gardener Program*. Available: [http://www.hort.vt.edu/mastergardener/index2.html] (8 February 2005).

Watson, D.P. and Burlingame, A.W., 1960. *Therapy through horticulture*. Macmillan, New York.

Welch, R.M., 2004. Farming for Health: the future of agriculture. *In:* Crozier, C. ed. *Southern plant nutrient management conference proceedings, October 5-6, 2004, Olive Branch*. 35-41.

Wynn, A.R., 1993. *Paying tribute to Melwood (extension of remarks - October 19, 1993)*. Available: [http://thomas.loc.gov/cgi-bin/query/z?r103:E19OC3-147] (10 February 2005).

APPENDIX I

ORGANIZATIONS AND TRAINING PROGRAMS FOR NETWORKING AND PROFESSIONAL DEVELOPMENT

Horticulture- and plant-related organizations

American Horticultural Therapy Association (American Horticultural Therapy Association (AHTA) 2005b) is the only national organization concerned with the promotion and development of Horticultural Therapy programming, providing resources to professionals to expand the field of practice, including peer-reviewed registration.

Gardening for Good (Gardeners of America 2004) is a national non-profit organization that reaches out to professionals, individuals and caregivers with ideas and programs that help older adults continue to enjoy gardening and nature.

Meristem (Meristem 2002) is an educational, not-for-profit organization based in New York City. The organization's mission is to promote nature's role in the improvement of human health and well-being through the development of restorative gardens in health-care environments

American Society for Horticultural Sciences (American Society For Horticultural Science (ASHS) 2005) is the association of members of the academic community and serves as the "cornerstone of research and education in horticulture and an agent for active promotion of horticultural science".

American Community Gardening Association is a membership organization composed of people working in and supportive of community gardens. The community-garden effort may take many forms such as: school gardens, neighbourhood plots, community greening projects and therapeutic and teaching gardens, and can be in urban and rural settings. "The Association recognizes that community gardening improves the quality of life for people by providing a catalyst for neighborhood and community development, stimulating social interaction, encouraging self-reliance, beautifying neighborhoods, producing nutritious food, reducing family food budgets, conserving resources and creating opportunities for recreation, exercise, therapy and education" (American Community Gardening Association (ACGA) 2004).

The American Association of Botanical Gardens and Arboreta (American Association of Botanical Gardens and Arboreta 2005) is the association for North-American public gardens and their professional staff.

National Garden Association (National Gardening Association 2005) promotes home, school and community gardening as a means to renew and sustain the

essential connections between people, plants and the environment. Major program focuses on Kid's Gardening (Kidsgardening.com 2003).

American Horticultural Society (American Horticultural Society 2005) is one of the oldest national gardening organizations in the country. Since 1922, we have provided America's gardeners with the highest-quality gardening and horticultural education possible.

Men's Garden Clubs of America (Gardeners of America 2004) promotes men in gardening, and the Garden Club of Georgia's 2003-2005 administration has adopted a four-part community-service project entitled Plant 4 People (Garden Club of Georgia Inc. 2005).

Animal-related organizations

Delta Society (Delta Society 2005c) is an international, non-profit organization that unites people who have mental and physical disabilities and patients in health-care facilities with professionally trained animals to help improve their health.

National Service Dog Center (Delta Society 2005d) is a web-based Delta Society program, provides information and resources for people with disabilities who are considering getting a service dog or who are currently partnered with a service dog. The NSDC also provides resources for people with disabilities who have access problems entering the workplace and other public places with their service dogs.

Therapet Animal Assisted Therapy Foundation (Therapet Animal Assisted Therapy Foundation 2003) is a non-profit organization whose mission is to facilitate the use of animals in the healing and rehabilitation of acute and chronically ill individuals.

Dog-Play (Dog-Play 2004) is a service owned and operated by Diane Blackman. It provides articles, information, advice and opinion on our relationships with our dogs. At the site there is also information about the Pets in Prisons and Rehabilitation Program (Dog-Play 2003).

North American Riding for the Handicapped Association, Inc (NARHA 2005) founders established several objectives for the Association, two of which are operating-centre accreditation and instructor certification. These continue to be NARHA's most important programs.

American Hippotherapy Association (American Hippotherapy Association 2003) promotes research, education and communication among physical and occupational therapists and others using the horse in a treatment approach based on principles of classic hippotherapy. Registered therapists in hippotherapy are located throughout the United States.

APPENDIX II

TRAINING FOR PROGRAM PARTICIPATION OR CAREERS

While the number of training programs that support a career in horticultural therapy are limited, the American Horticultural Therapy Association (American Horticultural Therapy Association (AHTA) 2005a) provides information and links to several avenues to consider for those who want to integrate horticultural therapy into their career, including:

- Bachelor's degree or option in Horticultural Therapy
- Associate's degree in Horticultural Therapy
- Certificate in Horticultural Therapy (Horticultural Therapy Institute 2005)
- Individual coursework in Horticultural Therapy

One increasingly important source of volunteers for HT programs is the USDA Cooperative Extension Master Gardener Program (Dorn and Relf 2001).

According to the Delta Society (Delta Society 2005b), while the numbers of certificate programs and degree programs that specifically include AAT as part of their coursework are increasing, relatively few exist across the United States. Information about some of these programs follows. There may be additional educational programs not included here. If you learn of other options not listed, please ask them to send us information about their program so that they may be included and the list may be more complete. The Delta Society makes no guarantees about the course content of these programs and encourages you to search carefully for the program that will best meet your needs. Delta Society's Pet Partners® (Delta Society 2005e) trains volunteers and screens volunteers and their pets for visiting animal programs in hospitals, nursing homes, rehabilitation centres, schools and other facilities. Pet Partners Program was established in 1990 to ensure that 'both ends of the leash', people as well as animals, were well-prepared to participate in animal-assisted activity and animal-assisted therapy programs. Pet Partners is the only national registry that requires volunteer training and screening of animal/handler teams.

APPENDIX III

THE ROLE OF ARBORETA AND BOTANIC GARDENS

To support and enhance (and often initiate) these programs, many botanic gardens in the U.S. have a horticultural-therapy program with one or more registered horticultural therapists on staff. These programs rarely if ever see clients on site, but rather focus on outreach programs to establish programs at facilities throughout the community. Noted ones include: Holden Arboretum (Holden Arboretum 2005), Chicago Botanic Garden (Chicago Botanic Garden 2004b) and the North Carolina Botanical Garden (North Carolina Botanical Garden 2005). They offer training for professionals and volunteers as well as demonstration gardens both for professionals and public visitors who are interested improving their own gardening skills after an injury or stroke. However, other botanic gardens such as the Norfolk Botanical Garden have developed programs in cooperation with other agencies to serve clients directly through programs that support the goals and mission of the garden and the agency (Norfolk Botanical Garden 2005). The Horticulture Enrichment Learning Program is a non-residential, intensive day-treatment program designed to assist alienated, older youth in becoming invested in self-improvement, their community and their future. The Garden's therapeutic setting is used as a treatment tool for esteem building, role modelling, intense counselling and behaviour modification.

In addition, the education departments at botanic gardens are playing an important role in the profession. For example, the New York Botanical Garden (New York Botanic Garden 2005) has pioneered in the training of HT in their school, and the Chicago Botanic Garden has developed a Horticultural Therapy Certificate (Chicago Botanic Garden 2004c) and a Healing Landscape Design Certificate (Chicago Botanic Garden 2004a).

APPENDIX IV

USDA IN AGRICULTURE AND HEALTH CARE

Although the USDA does not have any programming targeted at supporting health-care programs, it does have a number of programs addressing the small farmer and children that currently serve a population including disabled and at-risk individuals. There are several established networks of USDA professional that have the skills and know to further the agenda of Farming for Health should that initiative become established in the U.S. The most important among the current programs are:

- **AgrAbility** is a large and active USDA program in support of disabled farmers targeted at ensuring that they can stay on the farm. While this program is focused on employability of the farmer himself the methods for successful farming have significant implication for use on a farm refocused on providing a treatment milieu for a client. The AgrAbility Project (AgrAbility Project 2005) was created to assist people with disabilities employed in agriculture. The project links the Cooperative Extension Service at a land-grant university with a private non-profit disability service organization to provide practical education and assistance that promotes independence in agricultural production and rural living.

  The AgrAbility Project assists people involved in production agriculture who work both on small and large operations. The Cooperative State Research, Education and Extension Service (CSREES), an agency of the U.S. Department of Agriculture, administers the AgrAbility Project (Cooperative State Research Education and Extension Service (CSREES) 2005b). While the USDA administers the AgrAbility Project, the Project funds both a National AgrAbility Project and several State AgrAbility Projects. In partnership, the National AgrAbility Project Staff at the University of Wisconsin – Extension, Cooperative Extension Biological Systems Engineering Department (866-259-6280) and Easter Seals (800-914-4424) provide training, technical assistance and information on available resources to the State AgrAbility Project staffs. The State AgrAbility staff provides training, site visits, on-farm assessments, technical assistance and other information directly to the farmer or rancher with a disability. Please refer to each State AgrAbility Project web page for more detailed information about their State AgrAbility Project. In 2004, twenty-four AgrAbility projects now engage Extension educators, disability experts, rural professionals and volunteers in offering an array of services, including:
  - identifying farmers with disabilities and referring them to appropriate resources;
  - providing on-site technical assistance on adapting and using farm equipment and tools, and on modifying farm operations and buildings;
  - providing agriculture-based education to help prevent further injury and disability;

- providing training to help Extension educators and other rural professionals upgrade their skills in assisting farmers with disabilities; and
- developing and coordinating peer support networks.

The national staff will also provide direct technical consultation to consumers, health and rehabilitation professionals and other service providers on how to accommodate disabilities in production agriculture. For example, staff can assist fabricators with designing hand controls for a tractor. In addition, national staff can provide members of other national and international agricultural and health-related organizations with information and resources to help farmers and ranchers with disabilities. Those eligible for AgrAbility services may have any type of disability – physical, cognitive or illness-related.

- **Community-Supported Agriculture (CSA)** was introduction to the United States from Europe in the mid-1980s. Consumers who are interested know the source and production methods for their food; they pre-purchase a share of the production from a farmer at the start of the growing season, thus providing guaranteed markets for the crops. Currently there are an estimated 400 CSA farms in the U.S. (Alternative Farming Systems Information Center 1999). This initiative is closely linked to USDA programs such as Sustainable Agriculture Research and Education (SARE) and Alternative Farming Systems (AFS). None of these programs have expanded to address the health aspects of time on the farm; however, the close relationship between the farmer and the customer makes this type of farm suitable for development of other client–farmer models of conducting a business such as presented by a Farming for Health model.
- **Small-farm support programs** (Small Farms@USDA) is another USDA program that potentially offers relevant support should a Farming for Health initiative be established in the U.S. Although this program focuses on research and outreach programs to increase small-farm sustainability through improved marketing and production, it has begun to address alternative income sources such as agro-tourism. It offers a potential for funding of research and education in the future and has a strong network established. Related to this area, the Community Food Security Coalition (CFSC), with over 325 member organizations, is an example of a non-profit organization that shares interests and concerns compatible with Farming for Health. It is dedicated to building strong, sustainable, local and regional food systems that ensure access to affordable, nutritious and culturally appropriate food for all people at all times. It seeks “to develop self-reliance among all communities in obtaining their food and to create a system of growing, manufacturing, processing, making available, and selling food that is regionally based and grounded in the principles of justice, democracy, and sustainability” (Community Food Security Coalition (CFSC) 2005).
- **Community gardening** in many cities has been sponsored through the Cooperative Extension Service of the USDA for increasing local food security while at the same time providing for community coalition and cohesiveness. Much of the work has been in low-income areas and with people with special needs that might otherwise have been directed to other government service

programs. In many areas, Master Gardeners have played a valuable role in the establishment and maintenance of programs. There are several sources for additional information on this work (Municipal Research and Services Center of Washington (MRSC) 2005; Nagai 2004; Urban Community Gardens 2005; USDA 1998; City Farmer 2005)

- **Youth and school gardening.** Programs to provide education and experience to school-age children offer tremendous opportunity to meet the needs of special-needs children including those in treatment setting, youth-at-risk and disabled youth in the community. Three USDA Extension programs are particularly relevant:
  - 4-H (4-H 2005) and 4-H USA (4-H USA 2005)
  - Children, Youth and Families at Risk (Cooperative State Research Education and Extension Service (CSREES) 2005a), and
  - Agriculture in the Classroom (Agriculture in the Classroom 2005).
  - Virginia Tech Cooperative Extension provides a web site that links to a wealth of on-line resources for developing youth gardening programs. There are all kinds of free publications, lesson plans and other information and ideas in nine categories listed (Virginia 4-H 2005).
- **Cooperative Extension Master Gardeners** (Virginia Cooperative Extension Master Gardeners 2005) are extremely active in providing extension-led programs for youth in public schools as well as other settings, and conduct highly effective horticultural-therapy programs in teams with therapeutic professionals.
- **Transition from other crops to horticultural crops** (Cooperative State Research Education and Extension Service (CSREES) 2005c). CSREES facilitates transition from other crops to horticultural crops to sustain agricultural production in the ever-expanding interface between urban and rural communities. Enterprises of all sizes look to horticultural crops for economic success because of their high value per unit area of land and resource inputs. The production techniques on many of these crops may facilitate incorporation of health-care clientele.

APPENDIX V

PROGRAMS EXAMPLES

The remainder of this paper will look at programs identified through the world-wide web and providing information on their goals and activities. They are divided into three groups: general farm-based, primarily horticulture-based and primarily animal-based.

Farm-based programs

Berkshire Farm Center and Services for Youth (Berkshire Farm Center and Services For Youth 2003) is a statewide non-profit social-service organization with a 116-year history of success working with at-risk children and their families. Known for its outstanding residential-treatment program for young men, Berkshire Farm is also a pioneer in responding to local needs and helping to create stronger communities around New York State with community and school-based programs for both boys and girls. In addition, the Farm provides secure and non-secure detention for youth who are awaiting action on court cases. Collaborative efforts with other child welfare agencies, places Berkshire Farm in the vanguard in juvenile justice and youth support services.

On any day, Berkshire Farm is serving 10,000 boys and girls and their families. About 63 percent of the children served in all programs experience success in Berkshire's programs, returning to or remaining in school through graduation, and having no further contact with the legal system.

Expanded over the years through donations and purchases of land, Berkshire's Canaan campus now comprises some 1,700 acres. Berkshire's residential-treatment centre in Canaan serves some 600 young men annually from urban, suburban and rural areas throughout New York State. The agency has nine regional and district offices around the state as well as additional satellite locations. Examples of agriculture-related work include students learning about sheep in 4-H and to care for horses in after-school programs.

Colorado Boys Ranch (Colorado Boys Ranch 2005) founded in 1959 is a national residential-treatment facility that provides mental-health services and accredited education to at-risk boys, ages 10 to 21, from Colorado and across the United States. Located in the rural city of La Junta, CBR serves youth who have concurrent psychiatric, behavioural and educational problems that prevent them from successfully functioning in their homes, schools and communities. The Ranch's mission is *to achieve excellence in providing troubled youth with the means to become hopeful and productive citizens.* In addition to academic classes, vocational education, animal-assisted therapy, and individual and family counselling, residents also benefit from the rural location, community support and strong emphasis on post-discharge care.

Using a variety of animals from hamsters and fish to dogs and horses, animal-assisted therapy provides an opportunity for boys to give and receive unconditional acceptance and love. Boys learn about proper care, handling, nutrition and health care for animals. They also learn to have compassion, gentleness and respect for animals, other people and themselves. Program elements include:

- The horsemanship program spans a broad range of activities: chores, grooming, riding, training, showing, health and nutrition. Besides the fundamentals of horsemanship, boys learn the essential nature of teamwork and self-control. The horsemanship program is accredited by the North American Handicapped Riding Association (NARHA).
- Small-animal therapy, boys work with a variety of creatures, including llamas, goats, cats, dogs, ferrets, guinea pigs, rabbits, chinchillas, birds and fish. They research the physiology and environment of the animals, and the boys take responsibility for their feeding, grooming and overall care. Through working with these smaller creatures, boys understand the fragility of life. They learn to control their aggression, curb their tempers and acquire gentility. They realize that violence, to which many of them have become accustomed, is not a healthy way to communicate and that living creatures, animal or mankind, respond positively to a loving touch. For some of our boys, it is the first time they have experienced a healthy relationship with another living being. The non-threatening nature of the animals also helps youth tolerate more threatening stimuli, such as exploring their painful pasts.
- New Leash on Life is a comprehensive dog-training program which pairs a CBR youth with an abused, abandoned or neglected dog from the county animal shelter for 10 weeks. Youth are responsible for feeding, grooming and simple training of their dogs throughout this time. At the end of 10 weeks, each boy takes his dog through the American Kennel Club's Good Citizen Test, after which the youth presents his canine to a loving family for adoption.
- Members of the Ranch's 4-H program undertake individual projects involving horses, cattle, rabbits, goats and crafts, which they may enter in local fairs. As a result, they learn leadership, responsibility and social skills while having fun.
- The Cattle Program educates youth about livestock, range management and agri-business. It also teaches responsibility and leadership, promoting cooperation, optimism and hard work.

Green Chimneys (Green Chimneys 2005). Founded in 1947, Green Chimneys is the nationally renowned, non-profit agency recognized as the leader in restoring possibilities for emotionally injured and at-risk children. Recognized as the worldwide leader in animal-assisted therapy, Green Chimneys operates residential treatment for children and a special-education school. Its mission is to help children reclaim their youth and the chance for a bright future through specialized treatment and educational and recreational services. Each year, Green Chimneys' restoration system gives hundreds of children and their families the tools that enable them to experience their youth positively, to regain a sense of self-worth and to create hope for the future as independent, positive and productive adults. Green Chimneys provides innovative and caring services for children, families and animals, and

targets its services at restoring and strengthening the emotional health and well-being of children and families, and fostering optimal functioning and independence. It strives to develop a harmonious relationship between people, animals, plants, nature and the environment through an array of educational, recreational, vocational and mental-health services. It is a voluntary, non-sectarian, multi-service agency.

Today, the agency serves children and adults with handicapping conditions and regular children and adults from New York City, the mid-Hudson region, Westchester and Putnam counties, and the counties of western Connecticut. To date, the agency is considered the strongest and most diverse of its kind involving farm, animal, plant and wildlife assisted activities. Program elements include:

- **Farm and Wildlife Conservation Center** houses a large collection of permanently disabled birds of prey and assorted wildlife. A licensed rehabilitation and rescue service is in continuous operation. **Supervised work crews including a lawn maintenance service**, a restaurant and a bottle redemption program under contract with the Connecticut Department of Mental Retardation (CTMR).
- **Bonibel Organic garden.** In addition to serving as a horticulture-therapy site for the children, the organic garden has a vegetable and plant stand that is open during the summer, providing fresh, organic produce and flowers to the community at reasonable prices. Maple sugar, harvested by the students, is also on sale.
- **Farm on the Moo-ve.** This is an educational, animal-awareness program that brings farm animals and their student care givers to schools, fairs and other public sites within a 60-mile radius of the Brewster facility – whether it is for a special event or an educational learning experience.
- **Therapeutic Horseback Riding.** Green Chimneys is a NARHA premier accredited centre and offers therapeutic riding.

Crossroads Group Home (Crossroads Group Home 2002) treatment program is based on the Green Chimneys model written by Dr. Samuel Ross of Brewster, New York, using an animal-assisted therapy program stressing the benefits of animals and birds of many varieties. Crossroads is the first group home in South Carolina to use animal-assisted therapy in the treatment of sexual-abuse victims. Pattered after Green Chimneys in Brewster NY, Crossroads is located on more than 10 acres of land at the foot of the scenic Blue Ridge Mountains in Greenville, South Carolina. Established as a residential treatment centre in 1993, the group home provides treatment for girls from 10 to 18 years old who have been physically, sexually or emotionally abused.

Having animals in one's environment facilitates a variety of benefits such as reducing stress related to PTSD and hastening recovery. Residents take part daily in the routine of a working farm, including the care of over 75 animals that live on the centre's 10+ acres. Although the mere presence of animals is therapeutic for the residents, nurturance with sexual-abuse victims is the chief benefit. Children who are emotionally scarred as a direct result of some type of abuse also benefit from the rehabilitation component of the AATP. Residents at Crossroads Group Home participate in the Crossroads 4-H Club as an integral component of the AATP. The

Clemson University Extension service chartered the Crossroads 4-H club in September of 1994. Extension agents as well as team leaders facilitate 4-H groups on a weekly basis addressing various topics directly related to the Crossroads AATP. Outings and projects such as Farm City Days, sponsored in conjunction with the U.S. Department of Agriculture is one example of the versatility of experience through 4-H. Other AATP groups are held weekly according to client needs as set forth in ITPs. Groups are an important part of each day's routine. Groups are held addressing topics such as habitat for specific animals, the development process of animals, care, feeding and training.

Camphill (Camphill 2005) is dedicated to social renewal through community building. It specializes according to the age group of the people it serves because the developmental needs of children, young adults and mature adults differ and, thus, the therapeutic approaches for people with developmental disabilities differ according to their age. Camphill in North America consists of ten independent communities, home to over 800 people on over 2,500 acres of land, which is cared for utilizing organic and biodynamic methods.

Camphill is a worldwide movement dedicated to community living that supports and values the contributions of all community participants without regard to their financial assets or their intellectual or physical capabilities. Camphill communities have taken up many tasks. Among the most prominent in North-American communities are:

- Providing education, advocacy, therapeutic care and other services to support people with special needs and help them participate fully in the world as contributing citizens.
- Caring for and healing the earth, together with people with special needs, through sustainable and healthy methods of consumption, agriculture and use of natural resources.
- Creating new social arrangements and intentional relationships that nurture the growth and development of individuals and families, inwardly and outwardly.

Dawn Farm (Dawn Farm 2005) is a private, non-profit organization offering co-educational, drug-free programs based upon the principles of Alcoholics Anonymous, licensed by the Michigan Center for Substance Abuse Services (CSAS), and accredited by the Commission for Accreditation of Rehabilitation Facilities (CARF). A strong work ethic and meaningful work activities are an integral part of the treatment process. During initial treatment, residents participate in two group therapy sessions a day, a variety of supportive activities and numerous AA meetings each week. In addition, work therapy enables residents to learn basic work habits, responsibility and self esteem. Residents are involved in farming – planting, harvesting and caring for livestock.

Horticulture program focus

Red Wiggler Community Farm (Red Wiggler Community Farm 2005) was founded by Woody Woodroof in 1996 to create meaningful, fully included jobs for adults with developmental disabilities through the business of growing and selling

high-quality, home-grown vegetables in Montgomery County, Maryland. The backbone of the farm is its Community-Supported Agriculture (CSA) program, which, by its nature, creates and nurtures a healthy and inclusive community. It also works to provide opportunities for area youth to participate in small-scale farming. Finally, all its activities occur in cooperation with nature and through the lens of environmental stewardship. The Red Wiggler method of farming aims to create fertile soil that will yield healthy plants and abundant harvests. This healthy and abundant environment is the base for the horticultural-therapy program. It uses cover crops, natural fertilizers and compost to enrich our soil. It cares for its four acres of vegetable plants without the use of chemical fertilizers, pesticides, herbicides or fungicides. Most of the jobs on the farm are completed without the use of tractors. Rather, they use their hands and simple hand tools throughout the workdays. By using these simple tools and "old-fashioned" methods of farming, they create jobs that are available to people with all levels of abilities. For instance, a driver's license is needed to drive a tractor, but no license is needed to weed a row of plants with a hand hoe.

Its mission is to provide and cultivate:

- Meaningful employment for adults with developmental disabilities. Its growers – adults with developmental disabilities – plant, care for, harvest the crops and meet the customers who buy their produce. For many of its growers, their relationship with Red Wiggler goes back 8 years and provides them with employment as well as vocational satisfactions they would not otherwise enjoy. Adults with developmentally disabilities are its primary target population.
- Educational opportunities for area youth to participate in all aspects of the growing cycle. Youth with and without disabilities join the farm team to ensure that the vegetables and flowers are given what they need. They help with harvests and often glean food from the fields for delivery to area food banks. Area youth are the second target population.
- Environmental stewardship. It actively preserves open farmland, creates and maintains fertile ground using sustainable agricultural practices and opens its doors to groups interested in visiting the farm to see how they make it all happen in concert with nature. Those who participate in the CSA program and the general public who learn from Red Wiggler about environmentally friendly farming practicing are the third target population.

Moody Gardens in Galveston, Texas (Moody Gardens 2005a) began in the mid-1980s with only a horse barn and riding arena. The purpose was to begin a hippotherapy riding-program for people with head injuries, but it has expanded beyond the original goal to become an integral part of the general community while still serving their original targeted population. Today Moody Gardens is one of the premier educational/recreational facilities in the Southwest. It also provides horticultural therapy, education and employment for persons with a wide range of physical and emotional disabilities. According to their website: Hope Therapy at Moody Gardens (Moody Gardens 2005b) was inspired by the son of Foundation Trustee Robert L. Moody, who sustained a head injury in an automobile accident and who subsequently discovered the healing benefits of therapy utilizing animals

and nature. Opening in January 1986, Hope Therapy became the cornerstone of Moody Gardens, an internationally recognized program offering rehabilitative horseback riding (Hippotherapy) to mentally and physically disabled individuals. Today's Hope Therapy offers horticultural therapy, through which individuals with disabilities can improve sensory awareness and motor abilities, regain confidence and learn new skills to prepare for employment opportunities. The massive greenhouse and Rainforest Pyramid at Moody Gardens are tended in large part by these special clients. Vocational training, or supported employment also is an important part of the program. This provides the opportunity for individuals with disabilities to develop the necessary skills to gain and maintain a job. Moody Gardens employs many of these individuals on a full- and part-time basis. Job coaching is provided as needed. Elements added to Moody Gardens to expand the community involvement include a convention centre, Palm Beach (a man-made exotic family beach), The Learning Place (home of educational programs), a large production area and water treatment plant (takes effluent from Galveston's water treatment facility and treats and polishes it for use on all exterior landscaping), a Medicinal Plant Program, The Rain Forest Pyramid, IMAX 3D Theatre Complex and Visitor Center (houses the Garden Restaurant and Dancing Waters light and fountain show, and America's first IMAX 3D Theater, which showcases films by some of the world's top filmmakers), Discovery Pyramid, 303-Room Moody Gardens Hotel and The Aquarium At Moody Garden.

Log Cabin Boys Ranch is the San Francisco Juvenile Probation Department's detention centre for boys 15 to 18 years old, nestled in the Santa Cruz Mountains. The very urban youth incarcerated there are learning native-plant propagation, habitat restoration and organic farming – employable skills – and at the same time contributing plants and produce to community projects back home (Van Cleef 2001). The horticulture program was begun in the early 1990s by the Juvenile Probation Department as one of the vocational training courses the kids are offered – photography, culinary skills and carpentry are some of the others. SLUG (the San Francisco League of Urban Gardeners) was brought into the project in 1997 to expand the program and offer its unique therapeutic twist. According to SLUG's project manifesto, the organization believes in "the power of the garden to transform individuals and community". In the program, the teens farm 4 acres of land and work in a fully operational, large-scale nursery. The food they produce is sold regularly at farmers' markets, and is used in SLUG's gourmet product line, Urban Herbals. The native plants are used by SLUG, San Francisco's Recreation and Park Department, and other landscapers to restore or landscape open spaces and community gardens. These community projects, in turn, can be potential sources of employment for the teens upon their release – a system SLUG calls "community revitalization in full circle".

Melwood (Melwood 2003a) is a leader in the advancement of services for people with developmental disabilities. For more than 40 years Melwood has provided opportunities and choices for independent living, vocational training, employment, community involvement, recreation and travel. Fully accredited, nationally and internationally recognized programs serve over 1,800 people with disabilities each year, throughout the greater Washington, D.C., metropolitan

community. Melwood has over 40 years of experience and success in the landscape and horticultural services field. One of the primary programs is a contractual grounds maintenance business currently serving customers with thousands of acres of grounds, throughout the D.C. metropolitan area (Melwood 2003b). They provide many aspects of grounds services, including, but not limited to: turf maintenance, landscape design, installation of plant materials, erosion control, and display-bed maintenance. In their own greenhouses they produce plants sold to the community and used in their landscaping projects.

Urban Meadows (Urban Meadows 2005) was established in 1998 by Thresholds Rehabilitation Industries, Illinois' largest and the nation's leading psychiatric recovery centre, as an outgrowth of its horticultural-therapy program. Its mission is to provide jobs, job training and self-sufficiency to individuals with a serious mental illness. Urban Meadows is more than a psychiatric vocational rehabilitation program: it is a commercial flower shop located in the lobby of its the Lurie Company's classic landmark building at 120 South LaSalle Street in Chicago's financial district. This exceptional location has enabled Urban Meadows to vastly increase its public exposure and sales. It is a place for its employees, who are mostly Thresholds members, to work on their recovery from a mental illness through the use of flowers and plants.

Animal-based programs

Tranquility Farm Equestrian Education and Renewal Center, Inc. (Tranquility Farm 2005) is a non-profit organization whose main goal is to develop a symbiotic relationship between man and equine to help deal with high stress, trauma, a physical, emotional or situational problem or injury. Its focus is on the therapeutic relationship between horse and rider as part of the healing process. Participants learn about themselves and others by participating in activities with the horses, and then processing feelings, behaviours and patterns. A bond with a horse will build confidence, improve communication skills, gain personal insights and develop new and effective tools to deal with life's challenges. Horses are very much like humans in that they are social animals with distinct personalities, attitudes and moods. The farm matches up horses to the needs of their partners and they teach and learn from each other.

Gambrel Farm (Gambrel Farm 2003) is a breeding and training facility located on western Washington State's little-known Key Peninsula. The farm is on a gorgeous cross-fenced 30-acre parcel of rolling pasture and forest, with extensive facilities including an indoor exercise area, outdoor arena, barn with 14 large stalls, 9 paddocks and numerous run-ins, a round pen, a pond, and enough varied terrain for young horses to learn their herd manners, go through woods and water, and graze to their heart's content.

After 30 years in the horse business, breeding primarily award-winning Arabians, the farm discovered the Haflinger through a series of happy accidents. The process of helping children attach to a loving animal friend, with the overall objective of rebuilding trust towards humans, is called AAT. When children have

lived in chaos and abuse, the disruption it causes in the bonding process leaves them distrusting and weary. There is nothing as well-suited as a Haflinger to begin the healing process. At the farm they give each child their own Haflinger to ride and care for. The children are given riding lessons that translate into riding experience on the trails and later in the mountains or on the beach. They share in chores, thus building a sense of community and helpfulness as they work together. The way they feel when others come to visit and they get to show off what they can do with their own horse, builds a sense of pride unmatched in any previous life experiences. Knowing that they are involved in something many others only dream about also builds self-esteem.

Animal-assisted therapy in counselling and school settings

Recent research and experience has demonstrated that the use of dogs as 'co-therapists' may be of assistance to counsellors in counselling with withdrawn and non-communicative counselees. The use of animal-assisted therapy (AAT) and animal-assisted activity (AAA) may be another useful tool, which could be offered in counsellor education programs and in school counselling programs (Chandler 2001).

Tracy Roberts brings her two Australian shepherd dogs, Lucy and Dottie, to school to act as teacher's aides in the fourth- and fifth-grade classes at the **Canterbury Episcopal School** in DeSoto, Texas. Lucy and Dottie are reported to be a comfort to the kids and a welcome relief from the stress of school. Dena Carselowey and her Labrador retriever, Buggs, are 'co-therapists' at Minneha Core Knowledge Magnet Elementary School in Wichita, Kansas. Each of these dogs provides unconditional acceptance the moment the student enters the classroom or the counsellor's office. Often the students will come to see the dog and stay to talk to the counsellor while they pet and play with the dogs. When animals are used with the school counsellor, the students often use the dog as an excuse to go see the counsellor. These animals enable the counsellor to interact with many more students than would normally be the case.

Shiloh Project (Shiloh Project 2005), a non-profit, tax-exempt 501(c)(3) organization, is a Fairfax County, Virginia-based non-profit organization teaching juvenile offenders and youth at-risk compassion, respect and responsibility toward animals and others through the experience of socializing and interacting with rescued homeless dogs. The Shiloh Project offers a rare and unique opportunity for juvenile offenders and youth at-risk in the Fairfax County community to participate in the experience of socializing and interacting with rescued homeless dogs.