

## PROJECT SOAR: SCHOOL GARDENS NOURISHING BODIES, EXPANDING MINDS

RUSSELL T. NAGATA AND RICHARD N. RAID  
*Everglades Research and Education Center*  
*University of Florida, IFAS*  
*P.O. Box 8003*  
*Belle Glade, FL 33430-8003*

*Additional index words.* Flowers, garden education, student gardens, vegetables.

**Abstract.** Present-day America is viewed as an urban, technological and industrial society. As a consequence many of us have lost sight of our agricultural background, which was so common a generation ago. Through Project SOAR (Sharing Our Agricultural Roots), school gardens are used to acquaint students with agriculture that is so important to all of us. At participating schools in Palm Beach County, FL, research and extension faculty, and knowledgeable agricultural personnel work with school administrators and interested teachers in the development of school gardens. To make the garden concept work, the entire cost of instituting the gardens at each school is supported by grants from local agricultural businesses. The cost for the initial set-up has run from \$600 to \$3,000 depending on garden size and related support items. The gardens have been incorporated into the various student curriculum and have been used in teaching math and communication skills, providing lessons in economics through plant sales, and community service through beautification and out-reach project. The gardens have served as a starting point for discussion in biology, ecology and general science.

### Introduction

Agricultural prosperity in the United States has made us the envy of the world. Americans are the most technologically advanced and productive group of any farmers found throughout the world. Early in this century a single American farmer fed and provided fiber for himself and about seven others (Janick, 1972). During the middle of this century a single farmer could do this for himself and 30-40 additional individuals. Now in the twilight of this century, a single farmer can feed and provide fiber for himself and nearly 100 other people. This efficiency in food and fiber production has led to the development of an American society that is the urban, technological and industrial envy of the world. However as a consequence of this efficiency, demand for farm labor has decreased allowing or forcing many people to select nonfarm employment careers and in the process lose their association with farming and agriculture. As a direct result, first hand involvement with gardening, agriculture and the connection between farmer and food supply has been lost to many. In the process we have even started to take our food supply for granted.

While school gardens have been around for a long time, a comprehensive approach has not. One of the primary goals of this project is education. To many, agriculture in general is

misunderstood, even in Palm Beach County, where total farm gate revenue exceeds one billion dollars annually. The perception is an industry that negatively affects the environment with fertilizers and pesticides that are associated with fish kills, loss of species, and mutations in animals. It is our goal that through education of agriculture in action and practice that students and parents can see and experience for themselves the impact of agriculture on their lives and the environment. To this end Florida offers a unique opportunity for school gardens due to its climate. Gardening is possible during the school year, unlike other northern areas where gardening is done during the summer months when students are on vacation.

### Program Concept

Project SOAR (Sharing Our Agricultural Roots) is the establishment of school gardens and plant nurseries and is directed towards elementary and middle school students. The project works with participating schools to establish garden and nursery sites, and to equip the schools with all necessary supplies to begin. The money and material donations of supplies come from the surrounding agricultural community. The facilities are setup to grow a variety of plants from seeds, cuttings, etc. An important part of the SOAR program is to assign a garden-knowledgeable person to each school as a resource person to help with things such as site selection, plant selection, and what to do in the cases of first time gardeners. The resource persons have been University of Florida faculty and other agricultural industry personnel. In the future we hope to encompass Master Gardeners and their skills.

We have found that the students in the SOAR program are very interested in the gardens if presented as an outdoor learning center. The hands on approach allows pointing out interesting items whether it is a plant disease, insects, or proper time to harvest, etc. Determination of good and bad insects in the garden can seem like a game, but when tied into lessons of ecology or biocontrol, it is learning at its best. Some of the benefits of SOAR are to provide students with a real opportunity to grow plants from seeds and cuttings, to eat garden fresh vegetables and to experience the life of a farmer in a small way. These experiences range from the joys of a bountiful harvest to the anxiety and anguish brought on by crop-destroying weather, pests and disease, poor planning and/or vandalism of the garden.

Another important concept of the SOAR program is to get students to view commercial production agriculture through the use of field trips. To view first hand, production agriculture can be impressive, meshing lessons in economics, good land stewardship, and respect for nature. Although field trips are a single picture of agriculture, this first hand experience to be on a farm does increase agricultural awareness and understanding of what is necessary for the production of food. Through our contacts to suggest and help to facilitate these field trips we can educate others while making it interesting for students and their parents. It was first thought that field trips would be taken using a bus. It was observed on a field trip this past year that the parents who drove were more interested in what there was to learn.

---

Florida Agricultural Experiment Station Journal Series No. N-01446. This project was supported in part by the Florida Sugarcane Growers Cooperative, Palm Beach County Extension, Palm Beach County Solid Waste Authority and the Palm Beach County School District.

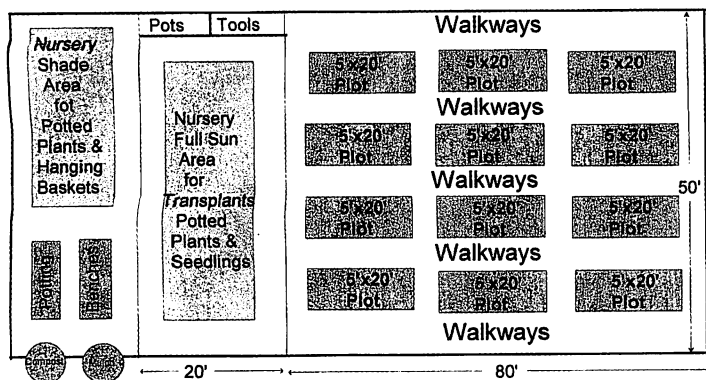


Figure 1. Typical layout for SOAR student gardens.

### Design of Gardens and Nursery Areas

The design for the garden area and plots were selected based on several vegetable gardening books and manuals (Anonymous, 1977; Splittoesser, 1979; and Stephens, 1990). The individual garden plots are designed to accommodate a class of 25 to 35 students at one time. We have design a layout (Fig. 1) that is shown to interested schools that can be installed in an area 100 × 50 ft. Water and electrical hookups are also important considerations. The electrical service is for automated watering systems and security lights if necessary. The standard garden plot is a raised planting bed, 20 ft × 5 ft × 6 inch (l × w × h) and was selected for ease and practicality of use. Most students can reach half way into the garden without having to step into it. The raised bed defines the borders of the gardens, helps to improve drainage and allows for the addition of compost to the soil. Beds are fashioned from 2 × 6 inch pressure treated lumber, anchored at the inside corners and middles of the 20 ft lengths with 4 × 4 × 16 inch post.

The gardens as designed allow for ease of planting and maintenance for most students except for wheelchair or walker bound students. At two schools that participate in the SOAR program, physically handicapped individuals are part of the student body. To accommodate students in wheelchairs, we constructed a higher raised bed garden plot, 22 inches in height, two ft wide and five ft in length. These were located next to concrete sidewalks if possible to aid in wheelchair movement.

All tools are provided to each school, having the coordinating teacher locate a suitable site near the gardens. A list of tools provided to each school is listed in Fig. 2. In working with elementary school age students it was important to keep them busy in the garden by having something for them to do. By supplying hand tools for each student no one is left out of the action. The act of simply holding the tool makes them feel a part of the garden, even while waiting their turn. The larger tools are for minor planting bed preparation, loading and spreading of organic compost material for weed and moisture control.

### Lessons from SOAR

One of the first lessons that a garden teaches a student is that it is not easy to grow our own food in the quantities that are needed to survive. The interaction of why a farmers uses chemical fertilizer and pesticides are integrated into the lesson. There is a new appreciation of food production and the joy gardening. The garden lessons are also tied into different

Figure 2. List of equipment and supplies provided to each school.

- |                     |                                |
|---------------------|--------------------------------|
| 3 - large shovels   | 2 - garden hoses with nozzles  |
| 3 - small shovels   | 2 - watering cans              |
| 3 - hoes            | 2 - small garden carts         |
| 1 - spading fork    | box of label stakes            |
| 4 - rakes           | ball of string                 |
| 30 - hand trowels   | 1 - locking tool storage chest |
| 5 - hand scratchers |                                |

aspects of what is going on in the community. We make use of compost created by the Palm Beach County Solid Waste Authority. We explain the process that went in to the creation of the compost from yard trimmings and other plant materials collected curbside. We continue with why organic material is good for the gardens. Some the best student response from the garden has come from casual tours of the gardens. On these tours the resource person has a chance to talk about interesting things about the gardens, the interaction of plants and insects, plants and diseases, insect and insects. The identification of beneficial and pest insects has always been a hit with students. There was a class that turned this into a "Mission Impossible" type theme where the class took the mission to identify good or bad insects, decided how to terminate the bad, and finally terminated bad insects.

All sorts of lessons have been spun off the gardens. Writing poetry about the garden for language arts. Lessons in math and economics are easily demonstrated with SOAR through plants sales. As a class project, students can run a simple business growing and selling plants. Students decide on what plants to grow, how much money they would like to raise, what can they charge for their plants, and how many plants can they possibly sell. This type of lessons fits well into math skills in real life situations. One of the more innovative teachers used squash flowers to support lessons in sex education. Her response was, "I get less chuckling and embarrassment".

In this day and age it is not uncommon to not know your neighbor or the people on the block. We live in a "Me" society where my needs comes first. A sense of community and doing good for that community is as foreign as the man on the moon. As a component of Project SOAR community projects are encouraged. This aids in the development of teamwork as the class decides on what to do and participates together to complete the project. Community projects that have been done are as simple as creating a flower bed to landscape a bare spot at the students' school using plants grown from seeds. Others have done the same in the community in which they live. One group grew potted plants and gave them to senior citizens in a retirement home that they visited.

Just being present in the garden with nature around you can be enough to make you stop to watch the world go by. Gardening in itself can be therapeutic to the soul. To be rewarded, it is not necessary to grow a full scale vegetable garden. Simple gardening, like a few butterfly plants (Morris and Herzog, 1995) can accomplish this. To start the interest in plants and agriculture in younger children, we found that butterfly gardening is great motivator. The simple pleasures of observing the butterflies' life cycle unfold before them is a great science lesson.

### Conclusion

The response from the SOAR garden program has been positive at the schools that have gardens in place. At present,

demand is greater than resources, in dollars and manpower, to allow all interested schools to participate in the program. The participating agricultural community supports the project and have renewed their support of the program. Additional groups have expressed willingness to support more schools. Parents have provided positive support for SOAR. Many have indicated that their child is very excited to be in the gardening program and has lead them through the gardens many times explaining what they learned from the garden.

## Literature Cited

- Anonymous. 1977. Home Garden Vegetable. In: 1977 Yearbook of Agriculture, Gardening for Food and Fun. U.S. Government Printing Office, Washington, DC.
- Janick, J. 1972. Horticultural Science, 2nd ed.: W. H. Freeman and Co. San Francisco, CA.
- Morris, J. and C. Herzog. 1995. Butterfly gardening for education, recreation and therapy. *Proc. Fla. State Hort. Soc.* 108:391-393.
- Splittoesser, W. E. 1979. Vegetable Growing Handbook. The AVI Publishing Co., Inc. Westport, CN.
- Stephens, J. M. 1970. Vegetable gardening project *manual and suggested program plans* for leaders, 4-H. Fla. Coop. Ext. Ser., IFAS, Univ. of Fla.

*Proc. Fla. State Hort. Soc.* 110:405-407. 1997.

## “CHILDREN AND GARDENING—IMPLICATIONS FOR THE FUTURE”

JENNIFER CAMPBELL BRADLEY AND SONJA M. SKELLY  
*Environmental Horticulture Department*  
*University of Florida, IFAS*  
*Gainesville, FL 32611*

**Abstract.** Children's gardens are receiving increased attention from botanic gardens, public parks, communities, and schools. It is easy to see the attraction—these gardens provide beauty, recreation, as well as learning opportunities for everyone involved. With this increased interest, there is a growing need to quantify the effects, if any, of these gardens on populations of children. Children's gardens promote many qualities important to both parents and teachers. These qualities include personal growth, social skills, environmental stewardship, active learning, improved health and nutrition, community improvement, and the learning of a fun, practical skill. Currently, research in this area is limited. Research initiatives are beginning, however, as researchers are analyzing the effects of gardening on children's attitude toward school, self-esteem, interpersonal relationships, and attitude toward the environment.

Children's gardening is an important cultural experience that is gaining momentum in public schools, botanic gardens, and community gardens. Children's gardens are in an area that is included under the broader research area of human issues in horticulture. Human issues and related research is a relatively new field within the horticultural sciences. The human issues research efforts relate specifically to the art of horticulture and the role it plays in human well being.

Throughout history, plants have been the source of solutions to many modern-day problems. Just recently, the benefits of people-plant interactions began to be investigated more thoroughly; research has shown positive benefits of such interactions. However, humans and their interaction with horticulture is an area that is in need of subsequent re-

search. Research findings will become more and more crucial to our industry as urbanization of communities continues to grow and our ever-increasing population lives in increasingly smaller spaces. The more we understand how plants influence society, the more we can use plants to enhance all aspects of life quality.

Horticulture provides many benefits to the well being of humans. These benefits include therapeutic qualities, physical exercise, and nutrition. While these benefits are important, additional benefits should also be explored. The basic premise of research related to human issues in horticulture is that by understanding the psychological, physiological, and social responses of people to horticulture and natural environments, a significant role in improving the physical and mental health of people, as well as entire communities, can occur.

Throughout the world, there is evidence that shows that people prefer settings that have vegetation or landscaping to those that do not (Ulrich, 1984 and Kaplan, 1973). Gardens have been used for therapy and as a means for rehabilitation with mentally ill persons, disabled soldiers, school children, and the hospitalized (Waliczek, 1997). A study done by Ulrich (1984) was fundamental in determining the importance of green spaces, especially for the hospitalized. Ulrich found that patients who were assigned to rooms with windows looking out onto natural scenes had shorter postoperative hospital stays, received fewer negative comments from nurses notes, and took fewer potent analgesics than patients in similar rooms but with windows which faced a brick wall. Additionally, outdoor environments have been said to enhance mental health in adolescents (Hanson, 1977), provide beneficial changes to participants' self-esteem and interpersonal relationships (Kaplan & Kaplan, 1982; Lewis, 1979; and Waliczek, et al., 1997), and increase stimulation for the outdoor environment and natural areas (Dressner and Gill, 1994).

The three main areas of interest to researchers in the area of human issues in horticulture are horticultural therapy, community gardens, and children's gardens. The focus of this

---

Florida Agricultural Experiment Station Journal Series No. N-01471.