# PROCEEDINGS OF THE NINETY-SIXTH ANNUAL MEETING of the FLORIDA STATE HORTICULTURAL SOCIETY

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U.S. Units <sup>z</sup>	Metric Equivalents	Conversion Factors Metric to U.S.
Length or Thickness		LEIME I
l mile l yard l foot (ft) l inch l mil (1/1000 inch)	= 1.6093 kilometers (km) = 0.9144 meters (m) = 0.3048 m = 2.5400 centimeters (cm) = 0.0254 millimeters (mm)	X 0.6214 X 1.0936 X 3.2808 X 0.3937 X 39.3700
Area		
I square inch (inch <sup>2</sup> ) l square yard (yd <sup>2</sup> ) l acre l section (mile <sup>2</sup> )	= $6.4516$ square centimeters (cm <sup>2</sup> ) = $0.8361$ square meters (m <sup>2</sup> ) = $0.4047$ hectares (ha) = $258.988$ ha	X 0.1550 X 1.1960 X 2.4710 X 0.0039
Volume or Capacity		
I pint I gallon (gal) I bushel (bu) I acre-inch I Fla. field box (4,800 inch <sup>3</sup> ) I Fla. citrus carton (4/5 bu)	= 0.4732 liters = 3.7853 liters = 35.2381 liters = 102.7938 cubic meters (m <sup>3</sup> ) = 0.7866 hectoliters (h <i>l</i> ) = 0.2822 h <i>l</i>	X 2.1133 X 0.2642 X 0.0284 X 0.0097 X 1.2713 X 3.5436
Weight		
I ounce (oz) 1 pound (lb.) 1 hundredweight (cwt) 1 ton	= 28.3495 grams (g) = 0.4536 kilograms (kg) = 45.3592 kg = 0.9072 metric tonnes	X 0.0353 X 2.2046 X 0.0220 X 1.1022
Rate or Yield		
l grain/pound (gr/lb.) l pound/acre (lb./acre) l ton/acre l gallon/acre (gal/acre) l Fla. field box/acre l bushel/acre (bu/acre) l pound/100 gallons (lb./100 gal) l cubic foot/minute (ft/min)	= 0.1429 grams/kilogram (g/kg) = 1.1208 kilogram/hectare (kg/ha) = 2.2417 metric tonnes/hectare = 9.346 liters/hectare = 1.9437 hectoliters/hectare (hl/ha) = 0.8705 hl/ha = 1.1983 grams/liter (g/liter) = 0.4720 liters/second (liters/sec	X 7.0000 X 0.8922 X 0.4461 X 0.1070 X 0.5162 X 1.1488 X 0.8345 X 2.1186
Energy, Light, & Pressure		
l horsepower (HP) I foot candle (ft-cp) I pound/square inch (psi) I British Thermal Unit (BTU)	= 0.7457 kilowatts (kw) = 10.7639 lux = 70.3069 grams/cm <sup>2</sup> = 0.2530 kilogram calories (kg-cal)	X 1.3410 X 0.0929 X 0.0142 X 3.9526
Temperature		
Fahrenheit = $(C \times 9) + 32$ 5	Celsius (Centigrade) = $(\underline{F - 32}) \times \frac{32}{9}$	5
o <sub>C</sub> -20 -10 0 10	20 30 40 50	60 70
<b>oF</b> 0 20 40	60 80 100 120	140 160

#### CONVERSION: U.S. & METRIC MEASURES

<sup>2</sup>Note that these are United States measures which ofter differ from British, eg., the ton, hundredweight, bushel, gallon, etc.

## EDITORIAL POLICY

The Society follows the editorial policies of the American Society for Horticultural Science. The only exceptions to this relate to the need to serve growers, amateur members, and others for whom the more cryptic abbreviations, purely metric measures, etc. may be an inconvenience.

# $\mathcal{P}$ roceedings

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1983

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## AWARDS OF THE SOCIETY

Presidential Gold Medal Award



### Robert M. Craig

Award granted to Robert M. Craig, Soil Conservation Service, Gainesville, Florida, for having contributed most to Florida horticulture through work published in the Proceedings of the Florida State Horticultural Society over the preceding six-year period in the Garden and Landscape Section.

## Awards for Outstanding Papers

C. A. Conover A. H. Rouse J. O. Whiteside C. R. Barmore

Awards for outstanding papers in Volume 95 of the Proceedings of the Florida State Horticultural Society presented at the annual meeting of the Society (November 3, 1983) by President Charles Conover.

Citrus Section

L. R. Parsons, T. A. Wheaton, D. P. H. Tucker and J. D. Whitney, "Low Volume Microsprinkler Irrigation for Citrus Cold Protection".

Garden and Landscape Section

A. A. Will, Jr. and D. Burch, "Landscape Plants for the High pH Soils of South Florida".

Handling and Processing Section

S. V. Ting, S. M. Barros and P. J. Fellers, "Physical and Chemical Characteristics of Water Extracted Soluble Orange Solids Produced in Florida".

Since 1892, one of the major roles of the Society has been providing, through its Proceedings, a medium for disseminating new and needed information among Florida horticulturists. Because Florida horticulture is often so different from that of the rest of the country, the Proceedings often

R. C. J. Koo	W. Grierson
R. A. Conover	Paul F. Smith
J. R. Orsenigo	T. W. Young
W. E. Waters	James W. Strobel

Krome Section

T. L. Davenport, "Avocado Growth and Development". **Ornamental Section** 

A. J. Overman and B. K. Harbaugh, "Effect of Tuber Source and Fumigation on Caladium Tuber Production in Two Soil Management Systems".

Vegetable Section

G. Ellal, H. H. Bryan and R. T. McMillan, Jr., "Influence of Plant Spacing on Snap Bean Yield and Disease Incidence".

President's Industry Award P. A. Button, "Comparison of Night Leaf and Air Temperature-Winter 1981-82".

Council Memorial Tomato Research Award

M. Sherman, J. R. Hicks and J. J. Allen, "Standard Shipping Containers for Florida Tomatoes".

provide the only workable channel for such information. In 1968, the Presidential Gold Medal Award was instituted to honor authors notable for continued and useful contributions to these Proceedings. Since then, gold medal winners have been:

J. F. Morton	W. S. Castle
S. J. Locascio	C. W. Campbell
C. A. Conover	
J. H. Bruemmer	

## Presidents of the Florida State Horticultural Society from 1888 to Present

Year	Presidents	1959	S. John Lynch
1888-1896	Dudley W. Adams	1960	W. L. Thompson
1897-1904	George L. Tabor	1961	Ruth S. Wedgworth
1905-1906	C. T. McCarty	1962	John H. Logan
1907-1908	P. H. Rolfs	1963	Herman J. Reitz
1909	William C. Richardson	1964	Willard M. Fifield
1910-1922	H. H. Hume	1965	Ernest L. Spencer
1923-1929	L. B. Skinner	1966	Arthur F. Mathias
1930-1936	John S. Taylor	1967	Ed H. Price, Jr.
1937	C. W. Lyons	1968	J. R. Beckenbach
1938-1940	Charles I. Brooks	1969	G. M. Talbott
1941	T. Ralph Robinson	1970	F. E. Gardner
1942	Henry C. Henricksen	1971	O. R. Minton
1943-1947	Frank M. O'Byrne	1972	R. A. Dennison
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1949	Frank Stirling	1974	G. G. Norman
1950	Leo H. Wilson	1975	Leon Miller
1951	G. Dexter Sloan	1976	John W. Sites
1952	Frank L. Holland	1977	J. B. Pratt
1953	R. S. Edsall	1978	R. R. Reed
1954	M. U. Mounts	1979	J. F. Morton
1955	H. A. Thullbery	1980	C. Wayne Hawkins
1956	R. A. Carlton	1981	W. Grierson
1957	R. E. Norris	1982	Roger Young
1958	A. F. Camp	1983	Charles A. Conover

### **HONORARY MEMBERS\***

Anderson, J. B.	1922	Holland, Spessard L.	1945	Reitz, Herman J.	1970
Beckenbach, J. R.	1967	Hoyt, Avery S.	1950	Reitz, J. Wayne	1955
Berckmans, P. J.	1893	Hoyt, R. D.	1914	Robinson, T. Ralph	1942
Berger, E. W.	1 <b>94</b> 0	Hubbard, E. S.	1922	Rolfs, P. H.	1921
Blackmon, G. H.	1964	Hume, H. Harold	1927	Rolfs, Mrs. P. H.	1921
Bosanquet, L. P.	1924	Jamison, F. S.	1962	Ruehle, George D.	1958
Brown, Arthur C.	1952	Johnson, Warren O.	1965	Sharpe, Ralph H.	1974
Burgis, Donald S.	1980	Koo, R. C. J.	1978	Shaw, Miss Eleanor G.	1927
Camp, A. F.	1956	Krezdorn, A. H.	1979	Singleton, Gary	1962
Carlton, R. A.	1962	Krome, William H.	1973	Skinner, L. B.	1931
Chase, J. C.	1939	Krome, William J.	1927	Sloan, G. Dexter	1964
Chase, S. O.	1939	Krome, Mrs. Isabelle B.	1960	Smith, Paul F.	1972
Clayton, H. G.	1956	Lawrence, Fred P.	1973	Spencer, E. L.	1962
Colburn, Burt	1970	Lipsey, L. W.	1924	Steffani, C. H.	1958
Commander, C. C.	1952	Logan, J. H.	1965	Stevens, H. B.	1934
Cooper, W. C.	1981	Lynch, S. John	1975	Swingle, W. T.	1941
Dickey, R. D.	1968	MacDowell, Louis G.	1968	Taber, George L.	1914
Edsal, R. S.	1967	Magie, Robert O.	1977	Tait, W. L.	1962
Fairchild, David	1922	Mathias, A. F.	1972	Talbott, George M.	1980
Fifield, Willard M.	1955	Mayo, Nathan	1940	Tenny, Lloyd S.	1956
Flagler, H. M.	1903	Menninger, Edwin A.	1964	Thompson, Ralph P.	1962
Floyd, Bayard F.	1944	Miller, Leon W.	1972	Thompson, W. L.	1962
Floyd, W. L.	1939	Miller, Ralph L.	1972	Thullbery, Howard A.	1962
Forsee, W. T., Jr.	1973	Mounts, M. V.	1958	Veldhuis, M. K.	1972
Gaitskill, S. H.	1909	Mowry, Harold	1950	Ward, W. F.	1962
Gardner, Frank E.	1967	Newell, Wilmon	1940	Webber, H. J.	1941
Garrett, Charles A.	1957	Norman, Gerald G.	1967	Wedgeworth, Ruth S.	1965
Grierson, William	1979	Norris, Robert E.	1962	Wenzel, F. W.	1973
Harding, Paul L.	1968	O'Byrne, Frank M.	1962	Wilson, Lorenzo A.	1934
Hart, W. S.	1909	Painter, E. O.	1909	Winston, J. R.	1960
Hastings, H. G.	1939	Peterson, J. Hardin	1950	Wolfe, H. S.	1964
Hayden, Mrs. Florence P.	1934	Pratt, J. B.	1980	Young, T. W.	1978
Hayslip, Norman C.	1981	Redmond, D.	1893	Yothers, W. W.	1955
Henrickson, H. C.	1939	Reed, R. R.	1970	Ziegler, L. W.	1976
Holland, Frank L.	1962				

\*Date year award made.



CHARLES A. CONOVER Apopka PRESIDENT OF THE SOCIETY-1983

## PRESIDENTIAL ADDRESS

CHARLES A. CONOVER University of Florida, Institute of Food and Agricultural Sciences, 2807 Binion Rd., Apopka, FL 32703

Distinguished guests, fellow members, ladies and gentlemen . . . I would like to express my sincere thanks and appreciation to each of you for allowing me to serve as your President this year. This has been a great honor and a privilege bestowed on only a few members of this great society.

Most of you are aware, but for those that are new, operations of your society are conducted by the Executive Committee and many other functional committees of which there were 19 this year composed of over 100 of your fellow members. Based on our present membership, that means 1 out of each 16 members is serving on a committee. The major committees of your society include: Gold Medal Award, Council Memorial Tomato Research Award, Horticultural Industry Best Paper Award, Auditing, Local Arrangements, Student Affairs, Nominating, Membership, Best Paper Awards (for each section), Site Survey, Public Relations and Program Formulation and Publication Policy. The real backbone of the society is the committee system, and it continues to be viable.

This is the 96th Annual Meeting of this great society; in only 4 years we will be observing a century of service to horticulture in Florida. Although there are older horticulture societies in this nation, your society is the only one to continuously publish an annual proceedings. The proceedings provides a tremendous service to the horticultural industries of Florida—and even other areas, but this society as does agriculture, suffers from poor public relations.

Your principal Speaker, Dr. Henry Robitaille, will be providing some insight into communicating with the nonagricultural public, while Dr. K. R. Tefertiller will discuss the future of Florida Agriculture in the 80's. In keeping with this theme of communicating, I thought I would touch on a public relations problem in ornamental horticulture. We have a great story to communicate to consumers of agricultural products concerning efficiency and product costs, but also need to keep the public informed of the value of horticulture to the state.

The present system of calculating crop value in Florida agriculture is "standard" in the U.S. and relates to wholesale value of the commodity at shipping point. Treatment at shipping point varies, with some products shipped bulk while others are washed, waxed and/or boxed. However, at present wholesale value does not include processing (transformation of the harvested product).

Major horticultural commodities in Florida are divided into three areas; Fruit, Vegetable and Ornamental crops. Values of these crops are available from several sources with sometimes varying estimates. Data presented here are from the "Florida Agriculture in the 80's" report published by the University of Florida, Institute of Food and Agricultural Sciences in March, 1983.

Fruit Crops commodities represented primarily by citrus products is worth in excess of 1 billion dollars annually. The total wholesale value at the shipping point for non-processed commodities or delivered to the processor appears to be between 1.2 and 1.4 billion dollars annually.

Vegetable Crops commodities are varied with tomato the single crop leader. Overall wholesale value of vegetables

at the shipping point for non-processed commodities is near 1 billion dollars annually.

Ornamentals commodities have increased greatly in value at the wholesale level during the past 10 years with nonprocessed value now near 600 million dollars annually.

Historically, ornamental commodities have been handled like other horticultural products, with only wholesale value of new products considered as output. Ornamentals, however, have a service component to consider that is not necessary with other horticultural products. This is easily recognized since consumers consume vegetables and fruits, while we have yet to observe consumers eating ornamentals.

Within the ornamentals area, only turf has attempted to categorize the "true" annual value of its product. The system they use adds the annual value of after sale maintenance requirements to the annual wholesale value of the commodity. The reason this procedure appears valid is that additional fertilizer, water, pesticides, mowing labor, etc. are necessary to maintain turf in the possession of consumers while this is not necessary for "consumed" products. Utilizing this method, a dual system could be developed for ornamentals commodities which list the wholesale value, maintenance value and the true annual value for each commodity.

Data developed in this manner could yield the results shown in Table 1. For example, cut fern and cut foliage is similar to vegetables and fruits, in that it is consumed, and thus, has no maintenance value. On the other hand, turf is not consumed, since it is "maintained" for many years and requires continued inputs. Other ornamental commodities require varied levels of maintenance depending on the portion consumed and the longevity of the remainder.

Table 1. Comparison of wholesale and true annual value in millions of dollars basd on maintenance value.

Ornamental Crop	Wholesale Value	Maintenance Value	True Annual Value
Cut Fern and Cut Foliage	64	0	64
Floriculture	100	50	150
Foliage	250	50	300
Woody Plants	120	500	620
Turf	50	1000	1050
	584	1600	2184

Several benefits might accrue to ornamentals producers if the proposed system could be justified with proper economic analyses. These may include the following: 1) First and probably most important, there would be justification to increase support for ornamentals in Florida, or at least to maintain present support levels; 2) The real value of ornamentals in Florida as measured by jobs and products consumed would be available to interested parties; 3) Production and more importantly maintenance information would be generated if the true "value" of ornamentals would be recognized by those outside the industry; and 4) The increasing population of Florida will greatly increase value of ornamentals as compared to other agricultural commodities when maintenance value is considered.

Overall, the true value of ornamentals as an agricultural product will only be recognized when the present system of evaluation of annual worth is changed to handle this specialty product.

## THE LAND: A NEW VEHICLE FOR AGRICULTURAL COMMUNICATION

#### DR. HENERY A. ROBITAILLE Agricultural Manager, THE LAND, EPCOT CENTER

I am deeply grateful for the opportunity to speak with you this morning about a new vehicle for agricultural communications in the state of Florida. Walt Disney World has always done a fantastic job of promoting ornamental horticulture. Probably the two most commonly heard guest comments are that the parks are so clean and that the landscape looks so beautiful. I think the important thing is not that Walt Disney World spends money on landscaping, but that they landscape correctly. There are several graduate landscape architects and a superb core of professional ornamental horticulturists in the company. The support facilities for ornamental horticulture at the Tree Farm and Nursery are excellent.

We now have a new tool at Walt Disney World to promote food production. Why is it important to promote food production? This slide was taken last week here in Central Florida, but it could have been a picture of any one of a great number of agricultural commodities, and it could have been taken in almost any of the fifty states. American agriculture has been so successful that most people have left the farm and now take food for granted. One farmer feeds approximately 89 other people, and less than 3% of the United States population is involved in production agriculture anymore. I'd like to read a line from an article entitled "Chemical Industry Faces Challenges" which appeared in a recent issue of the *Florida Rancher and Grower*, in which they quote C. Fred Jones of Auburndale, who is chairman of the Florida House Agriculture Committee:

A growing number of folks think milk comes from a carton, not a cow, and they control future legislation.

This is not only a sad, but a dangerous situation as well, because agriculture is so important to the United States. Our food and fiber system accounts for 20% of our gross national product, 23% of our employment, essentially 24 million jobs, and 19% of all our export earnings. The rest of the world depends on us for 6-10% of their food, and it is predicted that by the year 2000 this figure will be anywhere from 11-18%. Eleven to eighteen percent of the world's food supply coming from the United States!

A well-informed public is very important to agriculture for supporting beneficial legislation and agricultural research, extension, and teaching programs, and, most importantly, for influencing our best young minds to select careers in agriculture and supporting fields. This last point was cited as one of our most serious long-term problems in agriculture by some of our leading university agricultural administrators at a recent conference entitled "Agriculture in the 21st Century," sponsored by Philip Morris Corporation. The major communication vehicle for most people today is, unfortunately, the mass media. Although its importance is undeniable, its penchant for sensationalism and, often, its reporters' lack of agricultural training, make it less than desirable as a sole information source. I can't resist citing one particularly appropriate example. This was photographed from a recent article in Forbes Magazine which discussed new agricultural technologies including genetic engineering and the biotechnology field, growth regulators and hybrid seed. Finally, this paragraph:

... but the most spectacular current breakthrough in chemical technology is already commercial. It's called hydroponics ...

Hydroponics is a very ancient technology, although as in all fields, there have been some new developments recently. There are about 500 acres of hydroponic food production in the United States today, the same as ten years ago in 1973. There is no future increase anticipated unless circumstances change dramatically. In Europe, where hydroponics is more important than in the U.S., it still accounts for only a very small percentage of total food production, and is expected to be used less for food and more for production of flowers and flowering plants in the future. So this magazine article was extremely misleading at best.

The Land is a very unique and creative new idea in agriculture communications that has to help. The entire facility covers six acres and is divided into a number of complementary shows. There are two restaurants, The Farmer's Market and The Good Turn. The 70mm film "Symbiosis" plays at the Harvest Theatre and is a tremendous film about agriculture and its relationship to the environment, and has been lauded by agricultural and conservation interests alike. You must see it. The fun song-and-dance show about nutrition is called "The Kitchen Kabaret." The important thing about this show is that it is geared to young people, and educational materials are beginning to be prepared to go out to schools promoting good nutrition via this show. The main attraction at The Land is a 15 minute boat ride, which takes guests through agricultural areas recreated in greenhouses. Here a boat is entering the Tropics. You see the sugarcane, cocoyams, and pineapples, and, as the boat winds its way through the Tropics, many other important tropical food and fiber crops. Crop scheduling is a big challenge because we try as much as possible to show the mature plant and the economically important part of the crop. From the Tropics the boat enters the Aquacell where aquatic animals like catfish, tilapia, eels, shrimp, crawfish, sunshine bass, paddlefish, and sturgeon are grown in high densities for food. In the Desert drought-tolerant crops particularly well adapted and suited for dry land agriculture are grown. The Desert Greenhouse is filled with horticulture crops grown in very high densities to contrast open field versus greenhouse agriculture in the desert. Although The Land is primarily an education and demonstration facility, it is also an importan production facility and tons of tomatoes, cucumbers, lettuce, aquatic animals and other crops are provided to the pavilion's restaurants. The voyage ends in the Creative Farm where hydroponics is used to grow plants in many different ways. Lettuce grows in the space drums under artificial light while turning at 40 revolutions per minute, and many different crops grow in hollow column pots with the nutrient solution misted down through the center. Tomatoes hang on conveyors with the roots totally exposed; the excess nutrient soltion drips into a water hyacinth pond. The hyacinths are an example of plant biomass used for energy production a joint research project between Walt Disney World and the University of Florida.

We host approximately 25,000 people per day on the boat ride. The walking tours handle two orders of magnitude fewer, or approximately 200-300 people daily, but they are hosted by the staff agricultural professionals and serve as a very important outlet for guests who want to learn, ask questions, and discuss agriculture. The walking tours have been one of the most popular attractions at EPCOT Center this year.

Six professional staff members at The Land have advanced degrees in plant pathology, entomology, agronomy, horticulture, agricultural engineering and aquaculture. Some are currently working simultaneously on their Ph.D. degrees at Gainesville. There is a supporting staff of fifteen professionals at the bachelor of science level who work with the senior staff. A student program, which we will discuss in more detail in a few minutes, will eventually place ten agriculture students each semester at The Land.

Supporting facilities include a 10,000 square foot greenhouse used for propagation and for show of supportive horticulture research. Studies on new agricultural plants, new ways of growing crops, and variety trials are examples of research conducted in the support greenhouse. Five small greenhouses dedicated to pest management permit isolation of pest management research from the show crops. There is a small aquaculture support facility used for looking at new animals, quarantining animals before placing them in the show, and, to a limited extent, a hatchery operation to produce fry for restocking the show. A general biological laboratory is used to support programs in tissue culture, pest management, water quality and plant nutrition. The engineering, maintenance, and construction departments at Disney work with the agricultural staff in the development and implementation of new show ideas.

Most guests coming to EPCOT Center expect to see spectacular films, robots, and new transportation systems, but not food production. Departing guests, however, often cite The Land as their most popular attraction. This is extremely gratifying to us because it means millions are now considering agriculture with the future, with Future World, and this is our primary objective: to put agriculture in Future World. We're sometimes criticized for not showing a favorite crop, concept or technique. Obviously, we have limited space and capability and try, therefore, to use a "turn-on" approach. We show some very exciting things that guests haven't seen before to make them think. Some will leave thinking, and will generate new ideas that make important contribuions to agriculture.

Most crops on the list of the twenty most important are in the show, including rice and coconut, many important vegetables, and bananas and other fruit crops. The Land is also a unique opportunity to give exposure to crops much less utilized, but with great potential for the future. The winged bean is perhaps the best example. It is a good nitrogen fixing crop with edible roots, leaves and pods. The pejibaye or peach palm, whose fruit is an important source of vitamins, is also a good source of heart of palm because it copices and regenerates itself. Its soft trunks are also a potential source of processed starch. Jojoba is an example of one of many desert crops that produces extractable hydrocarbons. This is a can't miss economic crop for the future in the southwest, and large acreages are now being planted. It produces a high-quality oil similar to whale oil that will find important applications in industry. Many other crops like these are highlighted at The Land.

Another objective is to demonstrate important agricultural concepts and technologies. Intercropping is one that can significantly increase food production in the home garden on a square foot basis. The ancient bean/corn intercropping, used throughout Latin America, effectively shows how two crops benefit one another by providing nitrogen and a vertical support respectively. Several demonstrations emphasize the importance of fresh water conservation in

the future. Halophytes are plants that grow on seawater. More than 100 species with some potential for agriculture have been selected. Their potential is enormous because thousands of miles of desert coastline in the world could be irrigated with seawater. Trickle irrigation systems are used to grow the crops throughout the show. Aquaculture is currently the fastest growing new food industry in Europe, and experts predict it will be the same in the U.S. by the end of the century. The unique facility at The Land recycles its water through a series of mechanical and biological filters. Computers will be used in many ways at The Land. Our pest management program will soon be based on detailed environmental monitoring. Evenutally, they will be used to control irrigation systems, Aquacell operations, information gathering and cross indexing, and in many other ways. One future application for computers is in robotics, and with Walt Disney World's expertise and the help available in Gainesville we have the opportunity to make a spectacular, highly educational addition to the show. Plant tissue culture is used at The Land to obtain asexually propagated clones of plants like banana and pineapple free of both internal and external diseases. It is also a good method of choice for propagating some crops like strawberries. Any future show update will have to consider the broad area of agricultural biotechnology. Greenhouses are important to us for keeping the show open seven days a week year round, but greenhouses, of course, are also very important in horticulture. We're interested in greenhouse technology and, in fact, within the next year we should install a foam night insulation system that was developed at the University of Arizona. In no area have we put more effort than integrated pest management. Our program places heavy emphasis on sanitation and exclusion, and is based on scouting all plantings at least twice per week. Many different but compatible control measures are often used simultaneously. We have been successful in integrating biological controls with other methods in controlling two of our toughest insect pests, the two spotted mite and the vegetable leaf miner. Chemicals are the last but still very important line of defense and we depend heavily on the important agricultural chemicals for pest management.

We talked earlier about communicating agriculture via the boat ride and walking tour. We have many other avenues of communication open to us. The Land staff has done hundreds of interviews on radio and television, taped and live, domestic and foreign. We've done several shows on the Disney Channel, and hope in the future to do some full length specials on agriculture, originating from The Land. Many newspaper and magazine articles have been written about The Land, most well written and doing a very good job of communicating agriculture. You might have seen us on the cover of several important trade magazines like Agriculture Engineering and Food Technology. Another important way that we communicate is with large special groups that come by to visit with us. In the last two weeks we have hosted the Farm Industry Equipment Institute (FIEI), DNA Plant Technology, and a special group of V.I.P.'s at Walt Disney World for the dedication of the new attraction, Horizons. We meet with these groups, talk agriculture, and take them through the show to talk about crops and concepts. At EPCOT Center guests can go to Outreach for additional information or to have their questions answered, and teachers get V.I.P. treatment at the Teacher's Center where they can obtain information on agriculture to use in the classroom. We work closely with both Outreach and the Teacher's Center. We receive approximately ten requests weekly from young people turned on to agriculture, and answer all of these personally. The student program was

mentioned earlier. Students are selected for the program primarily on the basis of their potential for contributing to agriculture in the future. They're selected from the major agricultural universities and from all of the different disciplines within agriculture. Students work six months with us, rotating through the different areas and programs.

The Land has been open for over one year now, and we can look back to assess our success in communicating agriculture. We've had tremendous support from the scientific and agricultural community, including such persons as our nobel laureates Norm Borlaug and Melvin Calvin. I selected two comments from the many letters that have been received. Jerry Isaacs, past president of the American Society of Agricultural Engineers and department head in the Agriculture Engineering department at Gainesville wrote:

I've said several times before that The Land would be the most significant career guidance effort for agriculture in this century. After seeing it, I am firmly convinced this is true. And from Sylvan Wittwer, perhaps the foremost spokesman for American agriculture:

I can't tell you how enthusiastic I am about what I saw at EPCOT. You are doing in one week, or even in one day, more in giving visibility to agriculture than we are doing in an entire year, including all of our activities.

I want to thank the many, many people in Florida agriculture who helped and supported us in the past year. The tremendous help and support received was vital to our establishment and success. I hope that you will continue to interact in the future so that the show can remain dynamic and educational. Those who haven't seen The Land will, I hope, have an opportunity to come and visit us, take the walking tour, and relay their comments and suggestions. Thank you very much.