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THE NATIONAL PLAN FOR PRODUCTION AND MARKETING RESEARCH FOR FLORIST AND NURSERY AGRICULTURE

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Florist and nursery agriculture is classified as agriculture because it cultivates plants on 450,000 acres. The average net cash farm income is $45,712, the highest among all farm production specialties. The National Chair was created to analyze the growth potential of these Green Industries.

THE SCIENCES

The accomplishments for agriculture has occurred in an environment of management I call SCIENCE FOR SCIENCE. The obligation of the scientist was to seek knowledge, often over many years, in a specific field. The prime objective was to learn how a particular system worked, then propose a theory as to how to prove it, setup replicated tests, collect and analyze the data, and publish in a referred journal the findings. The scientist did not write summaries for the lay/user audience nor did they do extensive presentations to the lay/user audience. The practical applications of any new information was left to others, particularly extension agents and salesmen, to make the information serviceable to the lay/user audience. Many discoveries from that era of science still remain unused, often published in journals distributed to only a few libraries, and contributor/members. There were not any national data banks--other than indexed cards in the hands of a few scientists. Computer and on-line systems only began in the late 1970's/ early 1980's.

Many of the crops of florist and nursery agriculture have had detailed studies done on their genetics, rooting processes, growth and flowering, post production handling, and control of diseases, insects and stress. Some species dominate the literature--they include rose, carnation, chrysanthemum, poinsettia, petunia, and tulip for the florist industry and rhododendron and azaleas, elm, rose (landscape), magnolia, holly, yew, and crabapples for the nursery industry. There are hundreds of other species being marketed today with little or no genetic improvement, knowledge on the

culture, or their survival in the landscape. This is particularly true with our native plants (trees, shrubs, perennials, annual flowers), aquatics and wet-land plants, herbals, tropicals, alpine, and grasses.

In the 1980's, a new way of funding research emerged. I call it Survival Sciences--technology for compensation: Many facilities were not adequately funded beyond their basic salaries and overhead costs. In order to have graduate students and technicians working in the laboratory--it was essential for the lead scientist to receive grants from cooperating organizations. The projects that the cooperating organizations were interested in funding were not always the top priority, the best use, or the most productive avenue for the sciences and the scientists. The research was designed more to evaluate new products or to answer short term problems rather than to expand the fundamental basis of the sciences. No professional can sustain a life-long career with a series of focused, short term sources of funding. This science policy has resulted in the loss of the services of a number of promising scientists who should have continued on florist and nursery crops problems, but have shifted to research areas where funding is available.

The program planning proposed by the NATIONAL CHAIR FOR FLORIST AND NURSERY CROP REVIEW, (NPS, ARS, USDA) should help restore the FOCUS OF RESEARCH to BENEFICIAL SCIENCE--Research Advantageous to Society (to meet the interests of the consumer), Economy (to expand profitability), Export (to help balance trade payments), Enjoyment (to establish wellness), Excellence (to market highly desired plant products) and Environment (to sustain our world).

THE INDUSTRY

The RESEARCH PROGRAMS must become market driven. G. Carl Ball (Geo. J. Ball, West Chicago, IL) during the Chair's Convocation at the Chicago Botanic Garden (Glencoe, IL) recommended that The GREEN INDUSTRIES must continually prime the consumer with new products and processes. The primary focus of sales comes from the areas of current concerns such as drought and pest resistance, tolerances for cold and heat, and compact growth. Time-based management techniques will require that the GREEN INDUSTRIES respond quicker and with more comprehensive answers to the critical issues/opportunities. The industry must seek the research background to accelerate this process. Ed Bales of Motorola suggested that "time attracts costs," thus our green industries must cycle products more rapidly and effectively. In the electronics industries, for example, 55% of products offered each year had been introduced within the previous two years. Plant producers will have to restructure their production facilities for flexibility. The production must be organized around the flow of market information rather than around the flow of materials.

Any marketing process based on the flow of materials will require team work. It will begin with information from the sales floor. It must be

communicated in "real time" to the manufacturers plant. It should be automatically converted into a manufacturing schedule and delivery instructions: when to ship, what to ship, how to ship, and where to ship. The retail price of most products reflects a 20 to 30 percent cost of getting the merchandise from the manufacturer's loading dock to the retailer's store. Peter F. Drucker in the Wall Street Journal (September 24, 1992) suggests the "cost of keeping inventories in the manufacturer's, wholesaler's, and retailer's warehouses can largely be eliminated and enable companies to undersell local competitors despite its generally higher labor costs." Team work between all sectors of the GREEN INDUSTRIES should, in time, lower the costs of the products to the consumer and increase their quality as a result of more speedy handling.

Team work is also needed between the research scientists and the industries to take basic findings and translate them into practical practices for the GREEN INDUSTRIES. The pioneering work of Garner and Allard on photoperiodism has been translated into new year round products such as chrysanthemum, kalanchoe, poinsettia, and most bedding plants. The F-1 hybrids introduced into agriculture by such companies as Pioneer Seed and the Henry Wallace brought new products of excellence and productivity to American agriculture. The recent achievements with the rescue of hybrid New Guinea Impatiens and their wide acceptance by the public illustrates the team work between the scientists and the industry. Team work is needed between the industry and the consumer to teach them how to select and grow the new plant products and processes successfully. The garden centers of America must find and refine their missions to serve their customers. The strategic plans of many of our businesses are to rigid to make the adjustments to look at the "whole" story, not the parts.

THE CONSUMER

At the same convocation, Virginia Beatty (Beatty and Beatty, Evanston, IL) proposed that the consumer is the customer who is the opposite of the producer. They must meet, know, buy, and utilize the benefits that they can derive from plant products and services. At these meetings the why, who, when, and how must be met to achieve continuous sales and acceptance of what the florist and nursery crops provide. Since more than 80 percent of the businesses are owned by a family or a single entrepreneur--the successes are based more on experience than on specific marketing information about the consumer. As more larger marketing oriented firms begin to offer florist and nursery crops--the complexities and selling to both broad and niche markets will emerge. The GREEN INDUSTRIES must become market driven.

There are two separate consumer markets--Gardeners/growers, numbering no more than 2 million, purchases plants on many levels and areas of expertise. The gardener/growers market has long been the primary target of the florist and nursery agriculture. They identify their lives with

plants. They see their acts of caring and propagating plants, and their collections of plants, books, art, gardens, and scholarship as an appropriate use of times and resource. They can analyze and derive information even from the most technical publications and sources. Their actions and interests are often used to illustrate the elitism and private worlds of collectors/horticulturists and esthetes.

The non-gardener, numbering in the 80 millions, approaches plants and plantings without the interest in the special language or exclusive nature of horticulture/botany. They grow plants not for profit, not for the good of the individual. They grow plants to decorate an otherwise ugly world. They want to create an urban basis of plants, critters, lawns, and natural areas when they can escape the tensions of urban life. They must create these green spaces in their own surroundings because the truly pristine environment--if it exists anywhere--is too far away and require travel through too much traffic. They want lawns initially but soon look for alternatives for landscaping as the time available to garden continually is reduced. They "cut and paste" ideas on plants from all they see and do. The only information available to them are on the selling signs in the garden center, on the package of seed, or on the tiny 40 word care tags. The most critical information on the tag--where/how/distances/care--are buried on the tag underneath the growing media surface. They expect the plants to do better in the yard than they do in the nursery or garden center. They look for fun, variety, fragrance, durability, vivid/punch colors that will make it on its own terms. Their recent interests have been perennials, native plants, herbs, ornamental grasses, and aquatics. Their plants should have standard names, dated as to their saleability, in standard sizes based on the plant, not the container that it was marketed in. The plants, the garden tools, and the garden supplies should all have labels telling what they should be used for and how to use them safely and efficiently. This information is also needed on the full spectrum of gardening from seeds to container grown plants to B&B trees, to hoses and trowels, and to complete pesticide formulations.

The green industries have made great strides in making plants available year round which are less expensive, with greater uniformity, and better appearance. The new plant products must be based on the recent concerns of drought, soil compaction, chemical-free, and renewable resources. The information should be presented in a way that the claim that one Gerbera house plant will cleanse a living room of more than 400 kinds of air pollutants is backed up by solid, well substantiated data. The consumer has the feeling that many of the recent claims about plants are promotional rather than rooted in scientific facts. Mrs. Beatty thus sees the diversity of plants and services growing rapidly. She suggests that the size of the pie (the market) is growing much more rapidly than most professionals are aware of because there are so many sources, products, and services available in the urban areas--towns/cities/ jurisdictions.

Based on these 3 views and the imputs of 15 convocations across the United States with 400 participants from the GREEN INDUSTRIES--the research should be evaluated by:

EVALUATION OF CONVOCATIONS

- o Society benefits: Justifies investment to support even with diminishing research funds.
- o Product Quality: Performs to the full standards anticipated by the consumer.
- o Environment: Acts as the solutions to the maintenance of a sustainable system.
- o Economic: Provides the stimulus to support the development of a viable economy.
- o Export: Stimulates consumer interest across the world and provides funds to help the balance of payments.
- o Politics: Acquires the interest and support of the urban constituency to need the research benefits of urban agriculture in their daily lives and in their community.

RESEARCH PLAN
(THE FIVE "E"S)

The research needs for florist and nursery agriculture were related to five major topics.

I. Economics: Defining the business of florist and nursery agriculture.

II. Environment: Defining how plants can create and sustain a healthy environment.

III. Export: Defining how our expertise and climates can be combined to export world class florist and nursery products.

IV. Enjoyment: Defining what the plant products should be and how should they perform to meet the needs of the number one hobbyist of America.

V. Excellence: Defining how we can maintain the excellence of our plant products with the high risks of introduced pests.

I. Economics: Our green industries must begin the process of identifying all of the contributions it makes to the U.S. economy. It goes way beyond the $8.145 billion reported by USDA for the 1990 report. It also includes the service industries (grounds maintenance, trucking, interior design), supplies (media, fertilizers, containers, pesticides, furniture, irrigation systems), composting (removal and recycling of garden wastes), and construction organizations (greenhouses, gardens, public areas). Currently only 28 crops from 28 states, at a farm value of $150,000 are reported. Thus, the full impact of florist and nursery agriculture are not being captured either from the great variety of jobs or from the many speciality crops, particularly from small farm operations.

Recommendations:

1. Seek comprehensive data base to identify the size and employment status of florist and nursery agriculture.

2. Perform an audit of the facilities involved in producing the crops of florist and nursery agriculture and identify its impact on the tax basis of the country.

3. Project what the needs will be for jobs, facilities, and land to sustain the projected growth of florist and nursery agriculture.

II. Environment: Florist and nursery agriculture faces complex and expensive retrofit operations to bring its production facilities into the projected standards of zero impact on the surrounding environment. We do not even have systems in place to monitor many of the contaminates originating from other production facilities. All aspects of the production cycle of structures, watering systems, drainage systems, electrical and gas uses, media, containers, fertilizers, pesticides, conditioners, surfactants, and coverings need to be researched.

Recommendations:

1. Research is needed on how to build growing facilities (greenhouse, storage rooms, propagating structures) to meet the anticipated environmental standards.

2. Research is urgently needed to retrofit our 17,000 acres of protected culture (glass, plastic covered) to insure a zero impact production facilities.

3. Research is needed to reduce the energy requirements (gas, coal, oil, electricity, and labor) to produce and manage the crops economically as well as environmentally sound.

4. Research is needed to reduce specifically ground water contamination and pollution emiting from the business of florist and nursery agriculture.

5. Research is needed to identify the gases involved in the production of green plants in enclosed production spaces and in enclosed living spaces.

III. Export: The potential to export florist and nursery crops will require a totally new mind set for our research scientists, producing industries, and marketing organizations. The type of cooperative development that has brought success to the export of Dutch Iris bulbs from the northwest and acclimatized tropical foliage plants from Florida should serve as a model for all horticultural crops. Missing in many of our green industries are partnerships among our scientists, producers, and marketers. We must marshall our human resources to create total approaches where every player buys into the goals and the problem solving process. It will also mean the integration of a diverse workforce and innovation incentives to attract and retain key employees. Our industries must adopt standards for quality, seek ways to constantly improve them, and adjust/tract the performance of the green products as they meet the demands from a highly varied international market. We will need to strengthen our relationships with the consumer by the pursuit of innovation, needs-based selling systems, and target marketing programs. Our reliance on database technologies for monitoring inventories, customers, economy or market shifts must be established nationally for our export programs to be successful. We will need creative financing practices to support market expansion and investment strategies to maximize earnings and improve net worth. We will learn how to deal with many different kinds of currency. Contingency financial planning to survive during the inevitable cash flow situations will become part of our routine. The merger of facilities, people and processes to achieve increased output, timely and consistent delivery, and increased cost efficiency will be the desired goals for our TQM (total quality management) program for the export of green crops and products.

We will also have to seek product identity with trade marked names and logo's, information sheets, and promotional activities. As it now stands, the patent and variety protection extended to our recently introduced cultivars does not have automatic reciprocity in other countries around the world. Control and re-imbursement of intellectual properties around the world is a critical issue regulating international movement of horticultural crops. The other issue is the pest risk assessment of introducing exotic diseases and insects into the environment. All of these aspects must be decided and maintained by international diplomacy. Our agricultural products,

even in the conditions of today, are contributors to our balance of payments. Our horticultural crops can also play even a greater role in contributing to international trade.

Research horticulturists, by tradition, have always separated themselves from the marketing process of their products. This must change, otherwise, the new plant products and processes could be considered whimsy or fashion-driven.

Recommedations:

1. Research is needed to determine the pest risks involved in the marketing of plants overseas. The information involves support from the U.S. government that any individual firm does not have access to the pest risk assessments maintained by the government, the laboratory methods to identify the pest, and the measures required to free the plants from the undesired agent.

2. Research is needed to define how to produce, handle, ship, and distribute florist and nursery crops that will complete successfully in world markets.

3. Research is needed to identify the genetic composition of breeding lines and cultivars to aid in the protection of their intellectual properties. A facility is needed to house this information for future disputes on the rights to a specific gene, plant response, or plant.

4. Research is needed to meet the international standards for media, packing materials, trade marks, care tags, pesticides, and modified atmosphere.

IV. Enjoyment: Gardening is the number one hobby, being a part of almost 110 million homes, 50 million businesses and public buildings. The consumption of plants on a per capita basis is still relatively small, doubling to 13 flowers in 1990. Consumer enjoyment is in great jeopardy due to the rapid changes in the availability of environmentally acceptable pesticides and growing practices. The plants still must be blemish-free and possess enhanced keeping quality. The value preceptions of identifying quality products, how to produce these crops consistently year round and for many years continues to challenge the florist and nursery agriculture. The rules, availability of legal and safe pesticides, and the supporting product promotion are not available on a national level to help the sustained expansion of florist and nursery agriculture. The routes to introducing new "elite" cultivars have proven to be very difficult to manage on a national level. There are so many ways that new crops get to the consumer from many different sources and organizations.

Recommendations:

1. Research is needed on the PEOPLE-PLANT interactions to pave the way for the identification of the plant characteristics (color, form, name, fragrances, tactile, season change, fruit, berries) that trigger plant sales on a highly repetitive basis.

2. Research is needed to insure that the great diversity of plant products meet the anticipated interests of the consumer. With thousands of species for potential analysis-post production practices must be identified for all of the florist and nursery crops.

3. Research is needed to implement complete studies on how plants can be used to cleanse and restore the environment. All plans must play a role in recycling gases, nutrients, and water. Detailed studies are needed to trace these transformations and demonstrate these benefits (financial, environmental, sociology) to our consumers.

4. Research is needed to implement the total recycling of plant parts (leaves, roots, trunks, stumps, fruits) packing and growing materials (paper wrappings, plastic films and containers).

5. Research is needed to insure that the products of florist and nursery agriculture will not release organisms or genes into the environment that would change the balance, even on a community level.

6. Research is needed to chart the natural constituents of plants so that rashes and taxicities are identified and dealt with prior to the marketing process. The safety of the product from nature or genetic engineering must never be questionable.

V. Excellence: The top priority for the most critical research has always been pest control. The immediate impact of an insect, nematode, or disease is the most visual reason for the loss of a crop. We have accumulated a whole arsenal of defense methods. Sometimes a careful monitoring of the environment and sanitation are sufficient to control the spread of the problem. For many years elements such as copper, calcium and sulfur and botanicals such as pyrethrin and rotenone were the only control measures. Following World War II, many synthetic compounds were introduced which controlled a wide range of pests in extremely minute amounts. As our environmental agenda emerged, the costs of registering pesticides on florist and nursery agriculture-the so called "minor crops"--have escalated significantly over the past two decades. Many have been dropped because of the strict interpretation of the laws and the availability of new, more explicit evolution methods. We now face a situation that some of our most reliable measures such as benlate and

methyl bromide are facing removal from the market. We soon will not have an adequate arsenal of chemical control measures, legally registered, labeled, and distributed to manage the pest-risk potentials for the thousands of crop plants grown by florist and nursery agriculture.

Current examples of the lack of an action plan for national losses are:

White rust (Puccinia horiana) on chrysanthemum in California could wipe out a $300 million industry. There are no effective fungicides available.

Sweet potato whitefly (Bemisia tabaci, Strain B) found all over the United States is transmitting crippling viruses which destroy the plants. A massive program on field crops in underway. Funds need to be allotted to florist and nursery entomologists.

Benlate-a widely used fungicide, when marketed in a flowable formulation has killed crops and contaminated the growing media and beds with the highly toxic substance(s). Already $500 million in loses have been filed. Benlate has been withdrawn from the U.S. market for ornamental crops. There is no alternative chemical control chemical and no one knows how to detoxify the contaminated growing media.

SUMMARY

I. RESEARCH PRIORITIES
for Florist and Nursery Agriculture
THE GREEN INDUSTRIES

o PROFITABILITY:

- New plant Introductions
- Product/Production Development Systems
- Post Production Handling
- Export to the World Markets
- Energy/Fuel/Engineering/Conservation

o ENVIRONMENT:

- Water Management
- Pesticides/Alternatives/IPM
- Federal Regulations
- Regional Plant Evaluations
- Biomass/Recycling/Media/Nutrients

o ANALYSIS:

- Market Research: The Consumer
- Statistics: The Green Industries
- Systems Access: The Sciences

o RELATIONS:

- One Voice/One Agreed on Plan
- Involving: State and Federal Scientists
- Industry
- Funding Agencies: Federal, State, and Private.
- Consumer-oriented groups

II. RANKINGS: Based on Group Discussions

Overall: Societal Benefits

1. Benefits to the Economy:

A. Export Potentials near and far.
B. Statistical basis for justifications of investments in research.
C. Profitability by creating jobs, land use, tax base, profits for 83,000 jurisdictions in the United States.
D. Urban agriculture: Production vastly underdeveloped for potential markets acceptance.

2. Benefits to the Environment:

A. Clear air, water, soils, and plant products.
B. Active roles in restoring health of the landscapes and the wellness of the people.
C. Sustainable systems which recycle the essential building blocks of life.
D. Enhances the People-Plants interactions/support.

FORWARD PLAN

Based on these views (the Sciences, the Industries, the Consumers) and the inputs of 15 Convocations--a consensus panel of federal, state, and privately funded scientists will be creating a NATIONAL RESEARCH PLAN for the FLORIST AND NURSERY AGRICULTURE centering on systems for profitability and environmental. An analysis of the benefits of the plan to our economy, jobs created, and consumer impact will also be issued. Opportunities to be issued April 1993. A 4-page summary with anticipated costs will also be prepared for the GREEN COALITION to seed public and private support as ONE VOICE.