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FOLIAGE IN OUR

FUTURE

NASA conducts research on the purifying effects that live plants have.



by E. Shaunn Alderman
Assistant Editor

Will there *ever* be another plant boom equal or greater to the one of the 1970's?

If you are a grower, you have probably asked yourself this question at least once a week, especially lately. If you're like most foliage growers, this question might even be included in your prayers. With cautious optimism, *Florida Foliage Magazine* would like to report on some important research findings that just may have the potential to create a dynamic plant boom of the 1990's.

As great as it is, technology may be overrated. Sure, we have communication satellites, jets that travel faster than the speed of sound, microwave ovens that can "zap" our meals, and computers that "think" faster than man, but we also have allowed the same technology to create materials that may be potentially hazardous to our health. For instance, some man-made building materials contain levels of chemicals that researchers are now finding toxic to humans. So, in our efforts to open a new door and implement technological advancements in today's world, we may have slammed a door on our own efforts to make this world a healthier, safer, and more productive place.

The Bad News

Today's workplace may be a haven filled with contaminants that are considered health hazards. In fact, some offices that were constructed with the most energy efficient plans have been discovered as having the most harmful environments. These buildings were being sealed tightly to keep out the cold and the heat, but this creates a prob-

lem because the tight seal allows for no escape of indoor pollutants. Though we may not realize how many chemicals are "floating around" in our indoor environment, our bodies are feeling their effect. The emission of harmful chemicals found in today's workplace may be caused by many factors, including improper ventilation, mishandled chemicals, and certain types of building materials. Think about it; even the rubber cement you occasionally use in the office contains toxic fumes that are released into your indoor environment when you open the jar. Office partitions may be constructed of particle-board, which contains various levels of formaldehyde. (Remember how awful formaldehyde was on your nose when you dissected frogs in biology class?) Different types of dyes in some furniture and carpet have been blamed for causing flu-like symptoms among office workers. Much media attention has been focused on the dangers of working or attending school in buildings insulated with asbestos. Medical reports have made a possible connection between asbestos and some lung diseases. The list goes on. According to the National Institute for Occupational Safety and Health (NIOSH), some offices that reported having fresh air sources, were actually allowing diesel fumes to enter the building from truck-loading docks. Even fungus and mold, resulting from standing water, may be the cause of irritable health conditions among employees.

There is a list of pollutants which, by the safety experts, is considered potentially hazardous to the health of workers. Some of these contaminants may

even be considered carcinogens, or cancer-causing. Most of these findings are relatively new. Recently, within the past year, there have been televised reports on national networks about this problem on what has become known as the "sick building syndrome."

The Good News

Indoor air quality is not an environmental factor that is just now being examined. Concern about the quality of indoor air has, for years, been on the list of the National Aeronautics and Space Administration (NASA). In fact, according to a NASA report, entitled "Space Bio-technology in Housing," written by Dr. B.C. Wolverton, tests were conducted during the early 1970s on the condition of the atmosphere within the Skylab spacecraft. According to Wolverton's report, "a highly sensitive gas chromatograph coupled with a mass spectrometer (GC/MS) was used to monitor the atmosphere inside the spacecraft during the Skylab missions. Results from these studies demonstrated the presence of over 300 volatile organic chemicals (VOC) in the Skylab atmosphere during the occupancy of the Skylab III crew. Of this number, 107 were identified." From this information, NASA realized that in an enclosed area, the emission of chemicals from synthetic materials such as those contained in electronic equipment, would have potential health effects on man. According to Wolverton, "Due to mounting evidence of indoor air pollution problems, the need for simplified methods of purifying and revitalizing the atmosphere inside modern buildings and future space stations has become a necessity."

Necessity is the key word.

NASA continued its studies to find ways to clean the air in an enclosed atmosphere. After all, how would future missions prove successful if the air within the spacecrafts could not be purified? The experiments for remov-

ing indoor air pollutants were conducted in South Mississippi at the National Space Technology Laboratories (NSTL). NASA scientists used houseplants that produced abundant foliage in the development of a biological air-purification system.

Take a break for a minute and let your imagination blast off! Scientific research may provide proof of what foliage farmers have known for a long time; plants are good for people!

According to Wolverton's report, though "the long range goal of the NSTL research is the development of a

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bioregenerating life support system for future space stations, the immediate application of this technology is earthly." There's that word again, technology. This time, it sounds good.

"Earthly applications" include the use of houseplants as air purifiers. Plants must have a continuous exchange of gaseous substances between their leaves and the surrounding atmosphere. Though plant leaves give off water vapors and oxygen and take in carbon dioxide, studies have shown that the stomates on the leaves can take in other gaseous substances from the atmosphere. Wolverton's report includes the above mentioned information as well as this statement: "NASA's

studies with plants have demonstrated the ability of common houseplants such as the spider plant, Chinese evergreen, syngonium, peace lily, golden pothos, peperomia and banana plant, to reduce the concentrations of indoor air pollutants such as formaldehyde and carbon monoxide in sealed experimental chambers."

Take another break and think of the impact this information could have on the indoor foliage industry! Suddenly, the news media reports on information released by NASA stating that houseplants help clean the air inside our homes and workplaces. Everyone and his sister rushes to the local garden center, supermarket, and retail chain store to purchase the air-purifying plants. Interior landscaping might become a requirement for all new buildings being constructed, including offices, hotels, hospitals, restaurants, retirement homes and many institutions. Plants could become a necessity. And before you can say "It's a lift off," foliage sales will sky-rocket and a plant boom will be born, again.

What Next?

Continued research is needed to substantiate the ability of foliage plants to improve the quality of air inside buildings. NASA's projects are funded by the government and by corporations who hope to profit from the projects' earthly applications. Is this just a shot in the dark? At what point does technology become too expensive? Could the expanded use of interior foliage plants really be worth all the money needed to continue research? When you take the perspective of health officials, the answer might be YES! How many thousands of dollars a year do companies spend on medical insurance for employees? Maybe with the implementation of plants in the workplace, employees will be healthier and have fewer insurance claims. With the decrease of carcinogens in the atmos-

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SPECIAL REPORT

phere, disability claims for long-term diseases caused by workplace chemicals might decrease. Isn't it possible that this healthier atmosphere could set the scene for a more productive workplace? Isn't it possible that the economy could feel a positive impact from a nation of healthy and productive workers? The implications are limitless. Using technology to open doors to a better future is a positive move. Just think, with continued scientific research conducted by NASA, foliage in our future may even be more than a plant boom!


Note: This particular segment of NASA research was brought to our attention by the ALCA-IPD Research Committee. Headquartered in Falls Church, Virginia, the Associated Landscape Contractors of America is an organization made up of professional landscape contractors and interiorscapers. IPD is the Interior Plant-scene Division of ALCA. Research

Committee Chairman Dean C. Richardson, who also serves on FFA's research committee, shared with FFA the findings of NASA's studies.

In 1986, Dr. B.C. Wolverton gave a presentation entitled, "Space Bio-technology In Housing," at the convention of the National Association of Home Builders in Dallas, Texas. Richardson realized the impact that NASA's finding could possibly have on the indoor plant industry. He spoke with Wolverton about the report, and later a meeting was arranged with a NASA industry liaison. The idea behind the meeting was to establish a relationship between ALCA-IPD and NASA, enabling NASA to look to the group for financial support and direction concerning the use of various plant material. NASA designed a proposal to continue their scientific studies on the use of plants to purify indoor atmospheric conditions. In support of this proposal, the IPD gave \$10,000 and the other four divisions of ALCA provided

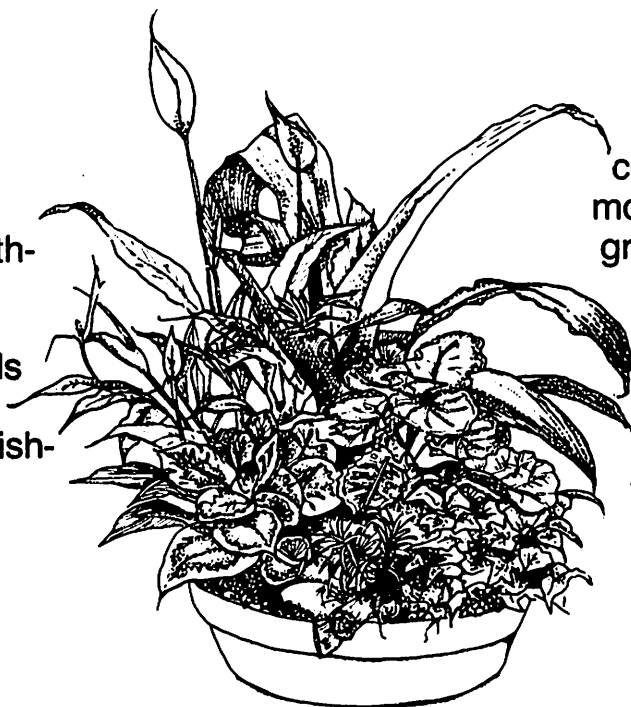
the additional funds to reach the \$25,000 mark. The decision to appropriate these funds was made by the Executive Board of ALCA General during a meeting on December 9, 1987. ALCA will receive quarterly reports on the status of the research project during NASA's two-year study.

Many people think NASA's only research objective is to find ways to create a greater possibility for man's future in space. About 50 percent of NASA's research work does not go to space. The private sector spends millions of dollars each year to sponsor various projects, such as experiments with electronic equipment and pharmaceuticals. This financial support from several corporations, coupled with governmental funding, makes up the lifeline that feeds NASA's efforts.

For more information concerning the ALCA-IPD/NASA relationship, contact ALCA, 405 N. Washington St., Suite 104, Falls Church, Virginia 22046 (703) 241-4004. 

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