ABSTRACT

REPORT ON A TECHNICAL COMMUNICATION INTERNSHIP WITH A NEWLY ESTABLISHED PLANT NURSERY

by Cathlene I. Leary-Elderkin

In this internship report, I describe my experience as a technical communicator for Midwestern Tropics Nursery (MTN), a newly established plant nursery associated with Miami University (Oxford, OH). The first chapter of this report introduces MTN, describes my role in the organization, and outlines the contributions I made to MTN during my internship. The second chapter summarizes the major projects I completed as an intern, including promotional materials, instructional guides, and an invention disclosure/plant patent application. The third chapter of this report highlights one of my major projects, the development of promotional materials, and how principles I learned during my MTSC coursework helped me to successfully complete this project. The concluding chapter of my internship report examines the evolving nature of MTN as an organization, and how this organizational environment influenced my writing process.
REPORT ON A TECHNICAL COMMUNICATION INTERNSHIP WITH A NEWLY DEVELOPED PLANT NURSERY

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by

Cathlene I. Leary-Elderkin

Miami University

Oxford, Ohio

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Committee Chair:__________________________________

(Dr. Jennie Dautermann)

Reader:_________________________________________

(Dr. Jean Lutz)

Reader:_________________________________________

(Dr. Carolyn Keiffer)
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ACKNOWLEDGEMENTS

I would like to begin by thanking Dr. Jennie Dautermann for serving as my committee chair. Her support and guidance as an advisor and as a technical writing professor was invaluable. I would also like to thank Dr. Jean Lutz, Director of the MTSC program, for accepting me as a very non-traditional student and encouraging me to never give up. Her dedication to her students is truly admirable. I would also like to thank Dr. Carolyn Keiffer for serving as a reader on my internship committee. She has always been there to support me as both a mentor and a friend. I also thank Lisa Rosenberger for serving as my writing mentor and for making time to visit with me throughout my internship.

I extend a sincere thank you to Dr. David Francko and the staff of Midwestern Tropics Nursery (MTN) for allowing me the opportunity to be a part of their organization. My experience as both a research associate and as a technical communicator for MTN was incredible.

Finally, I would like to thank my husband, Curt, for enduring countless weekends without me as I wrote papers and studied for exams. He never lost hope that I could juggle graduate school and a full-time job (even when at times I did). I will always be grateful.
CHAPTER 1: INTRODUCTION TO MIDWESTERN TROPICS NURSERY

From March through July of 2005, I completed an internship with Midwestern Tropics Nursery (MTN), a newly established plant nursery specializing in the production and sale of warm-climate plants for Midwestern landscapes. MTN is the first spin-off company supported by the Miami Center for Innovation and Commercialization (MCIC), a new organization created by the Office for the Advancement of Research and Scholarship at Miami University. The purpose of MCIS is to promote the development and commercialization of Miami University intellectual property by providing financial and organizational support to launch spin-off businesses. The founders of MTN are Dr. David A. Francko and Dr. Kenneth G. Wilson of the Botany Department at Miami University, who have been researching cold tolerance in plants for nearly eight years.

MTN was approaching its second season with plants on the market in Southwestern Ohio when I began my internship. MTN plants and plants products were being sold at Shademaker’s Nursery (Oxford, OH) and Natorp’s Nursery (Cincinnati, OH and Florence, KY) as a part of a collaborative effort by local nursery owners to provide unique plants to Tri-State customers. My position at MTN involved writing a varied set of documents to help launch this new company. In particular, I wrote a variety of promotional documents, instructional guides for plant propagation methods, and a patent disclosure for MTN’s new variety of banana. During my internship, I was mentored by Lisa Rosenberger, a Master of Technical and Scientific Communication (MTSC) graduate who has an extensive background in technical communication within the field of environmental science.

My experience as both a botany researcher and as a student of technical communication gave me a unique perspective on the process of creating documents for use in the plant nursery industry. Most of all, I enjoyed the opportunity to apply what I learned in my MTSC coursework to write documents within my specialty field of plant biology.

In this chapter, I describe background information on the following areas:

- MTN’s organizational structure and culture, workplace atmosphere, team collaboration opportunities, and management style
- Detailed descriptions of the work I completed for MTN
• Contributions I made to MTN

Description of MTN

The organization team for MTN consists primarily of personnel from the Botany Department at Miami University. The founders and leaders of MTN are Dr. David A. Francko, who was my primary supervisor, and Dr. Kenneth G. Wilson, both full professors of botany at Miami University. Two graduate students, Lu Li and Meepa Lokuge, contribute to the research effort that has led to the development of several cold-hardy plants and plant products. In addition, a number of undergraduate students have completed research projects that have contributed to the development of new products, such as a plant hormone foliar spray. The overall mission of the organization is to develop, propagate, and commercialize warm-climate plants that are cold tolerant in the Midwest.

All the individuals who are associated with MTN are scientists by training. Moreover, they are driven by their research interest and excited about the prospects of applying their research to commercial products. Through the MCIC program, the founders of MTN are provided with a support system of business professionals to assist with the tasks associated with starting a new company.

As a small company, the atmosphere at MTN was often dictated by the events of a given day. For example, when we had meetings with collaborators, the atmosphere was very serious and professional. However, the day-to-day environment was quite casual. Weekly meetings were held to discuss the progress of research initiatives and to plan for upcoming events. These meetings also served to provide group feedback for individual members of the lab seeking assistance with their research or in my case, feedback on emerging technical documents.

The leaders of MTN created an environment where everyone felt appreciated and excited about their contributions to the company’s objectives. My supervisor was always willing to schedule meetings to discuss upcoming projects or review drafts, and he always made me feel as though my contributions to MTN made a difference. Overall, the environment of MTN was characterized by enthusiasm. Everyone involved with developing and launching MTN was truly excited to be taking part in the process.
Nature of my Work

My internship as a technical communicator evolved from my experience working as a research associate for MTN. As a research associate, some of my responsibilities had included developing protocols for propagating banana plants via tissue culture and experimenting with plant hormone treatments to enhance the growth of select palm species. When I began my coursework for the MTSC program in the fall of 2004, I soon recognized that MTN was in need of a technical writer to assist in the complex documentation associated with transferring knowledge about laboratory procedures and promoting the products and plants sold by MTN.

At the beginning of my technical communication internship, I developed a list of projects with my supervisor that I hoped to achieve over the course of my internship. These projects were divided into three major categories: promotional materials, instructional guides, and materials for an invention disclosure/plant patent application. All three of these major projects are described in detail in Chapter 2.

Contribution to MTN

I viewed my contribution to MTN as two-fold: 1) I facilitated the transfer of knowledge of research procedures to future researchers and I helped to protect that knowledge by completing the invention disclosure/plant patent application; 2) I created documents to promote the products that MTN is currently marketing in the greater Cincinnati area. Since there was not a full-time marketing position within MTN, my promotional materials were the only ones used for the spring and summer 2005 sales season. Therefore, these promotional documents filled a significant need for the MTN organization.

In this internship report, I will discuss the following areas:

- An overview of my completed internship projects
- A detailed description of one major project (promotional booklet and mailer)
- An analytical evaluation of the organizational community of MTN and a discussion how this environment influenced my writing process.
CHAPTER 2: OVERVIEW OF PROJECTS

As described in Chapter 1, my internship objective was to generate promotional materials, instructional guides, and an invention disclosure/plant patent application for MTN (Figure 1). In this chapter, I provide a detailed explanation of each of my internship projects, and I describe how I distributed my time among these three major categories of projects.

![Distribution of Time spent on Major Projects](image)

Figure 1. Description of the distribution of time in weeks spent on my three major project areas.

Promotional Materials

As Figure 1 demonstrates, I spent more time on the promotional materials than on any other project. Based on the requests of MTN staff, there were four main promotional projects that were needed:

- **Plant Booklet**: A detailed booklet was requested to describe to the general public the plants that MTN sells and how to specifically care for them (Appendix A). A brief handout had already been developed that had been distributed at past events. This early document served as a reference for which species to include and provided some background information on caring for the individual plants. The audience for this booklet was garden enthusiasts who visit MTN’s
booths at garden shows and other promotional events. In order to meet the needs of this audience, the plant booklet needed to be well organized, concise, and jargon free.

The completed plant booklet was distributed at the Cincinnati Flower and Garden Show and a public gardening seminar at the Cleveland Botanical Garden. The booklet was also made available to the public at additional seminars presented by Dr. David Francko of MTN. Completing this project was a major milestone during my internship experience. It was an excellent opportunity to see a project through to completion, from an idea to a finished product for the public.

- **Mailer:** The MTN staff also requested a mailer detailing the latest plant varieties and products offered by MTN (Appendix B). This mailer was intended to be used in the spring of 2006 to forecast the products that will be available during that upcoming growing season. In addition to advertising the plants and products, I also added other features to this mailer including MTN’s mission statement and a section highlighting local gardening events where MTN staff would be speaking. I thought it was important to have the MTN mission statement in the mailer because it was our initial communication to our potential customers, and they likely wanted to learn more about who we are and what we are trying to achieve. I also chose to include information about upcoming MTN events so our audience could consider coming to a seminar or attending a tradeshow and thereby learning more about our plants and products.

  The final mailer was distributed earlier than our initial goal of spring, 2006. The mailer was distributed at the Cleveland Botanical Garden seminar that I described earlier. In fact, all 25 brochures were taken at this small seminar, which was definitely a positive sign. Exceeding our original goal for completing and distributing the mailer was a great accomplishment, and I hope that it helped to promote the upcoming 2006 growing season.

- **Logo:** When I began my internship, the development of a logo for MTN was already underway. Several ideas had been discussed, and sketches were developed that summarized the main features that the MTN staff thought should be included. The initial drafts of these early logos were completed in a quite outdated imaging program. My objective with the logo was to assemble ideas from the early logos and then modify the logo through incorporating the design principles I had learned in my MTSC coursework. I also wanted to make sure that the final logo
was created in an imaging program that was easily accessible and of high quality; therefore, I chose to complete the logo in Adobe Photoshop.

Once I completed a draft logo, I presented it to the MTN staff at our weekly meeting. I received useful feedback from my peers at MTN, which helped improve the later drafts of the logo. My supervisor, Dr. Francko, also frequently reviewed later drafts to ensure that the logo was precisely what was envisioned to represent MTN. With the text and images in precisely the right proportion, the logo was finally submitted to personnel from OARS to begin the copyright process (Appendix C).

- **Plant tags**: Plant identification labels or “plant tags” are attached to each species/variety of plant that MTN sells. These tags include a digital photograph of the plant and specific information regarding how to plant and care for the individual. The tag information is typically printed on waterproof, flexible plastic with a pre-made hole in the top center, allowing the tag to easily slip on to a branch or a stem. Part of my internship project included developing plant tags for MTN. I began by collecting the required information that is conventionally found on such tags: general description, USDA hardiness, culture information, and common diseases/insect pests. Given that these plant tags are generally small in size (about 2” × 5”), I relied on my MTSC training in technical writing to communicate the required information in an easy-to-read and concise way.

  I also reviewed the inventory of digital photographs that MTN had on file. I selected the best digital images for each species. Once the pictures were selected and the text was written, I sent this information to our colleague, Kyle Natorp, who later printed the tags using a specialized printer at his nursery. My final project included plant tags for the following species: Japanese Fiber Banana (*Musa basjoo*), Pink Velvet Banana (*Musa velutina* var. Pink Velvet), Needle Palm (*Rhapidophyllum hystix*), Dwarf Palmetto (*Sabal minor*), and Windmill Palm (*Trachycarpus fortunei*).

**Instructional Guides**

MTN staff requested that I complete instructional guides to transfer my knowledge of tissue culture procedures to future researchers at MTN. These guides included topics such as preparing a laminar flow hood for sterile culture work, preparing tissue culture media, and culturing steps
for micropropagation of bananas and palm embryos. Each guide included simple instructional statements and digital images to aid the user (Appendix D).

Since these manuals would be used in a laboratory setting, I had to consider the best way to present the required information so that it would be appropriate for the lab environment and also make it easily accessible to the lab workers who would eventually use them. I decided to print each instructional page on 8.5” × 11” paper, place the sequential sheets back to back so they appeared double sided, and laminate each two-page cluster. I printed each page on a separate piece of paper because I was afraid that the color images might bleed through to the other side, even though I was using a heavy weight paper. I stacked the laminated sheets together sequentially, and I created a small hole in the upper left hand corner of each stack with a hole punch. I then used a standard, metal key ring to join all the pages of each manual. Finally, I purchased metal, magnetic hooks which I used to hang the manuals from the side of the laminar flow hood and the dry erase board in the laboratory; these are the two general work areas discussed in the guides and they are where a user might look for a manual. I also laminated the manuals so that they could be wiped down with alcohol and placed in the sterile laminar flow hood by the user during lab procedures. This strategy was important because some tasks, including embryo isolation and banana apex culture, take place mainly under a sterile hood, and the users would definitely benefit from referring to their instructional guide as they completed their task.

Once I completed an initial draft of each instructional manual, I then conducted informal user tests to improve the drafts and pin-point any areas of confusion. Several new undergraduate researchers served as excellent user test volunteers; they represented the final end-users of manuals: newly hired researchers who might be unfamiliar with tissue culture work. My user testing involved shadowing the students as they performed the procedures written in the instructional guide and discussing with them the areas that were confusing or needed improvement. This user testing experience did greatly improve the quality of the instructions. In addition to this user testing, I also sought the editorial advice of seasoned MTN lab workers who meticulously read the manuals for content. When the instructional manuals had been user tested and reviewed by members of the MTN lab, I sent the manuals to my supervisor for a final review. After completing the final manuals, I placed them in their respective areas in the lab.
After I completed my internship, I received a phone call from an MTN staff member who thanked me for completing the instructional manuals. She had transitioned into a new position in the lab and was grateful that instructional manuals were available as a reference.

**Invention Disclosure/Plant Patent Application**

As a research associate, my goal was to develop a protocol for micropropagating bananas to successfully asexually reproduce a unique *Musa basjoo* banana on campus that MTN has named the “Upham Giant.” Our interest in this specific banana is due to its significant vigor within our local USDA Hardiness Zone (Zone 6 B). Because of its unique qualities, this banana became a candidate patent protection. In order to proceed with the invention disclosure/plant patent application, a defined protocol for asexually reproducing the “Upham Giant” was required. As a research associate, I spent approximately eight months developing a successful procedure to clone the “Upham Giant.” This research involved collecting “pups” or asexual clones from the base of the main plant, sterilizing them in alcohol, dissecting the pup to reach the apex tissue or the actively dividing region from which a new plant could develop, and placing the apex tissue in plant tissue culture media (a jelly-like substance that contains the nutrients, salts, and hormones required for plant growth) that induced it to multiply. Once the individual multiplied in culture, I divided it into individual plants and placed them in their own sterile container in tissue culture media. This tissue culture procedure allowed us to grow banana plants that were genetically identical to our unique “Upham Giant.” Once I completed the research and successfully cloned the “Upham Giant,” the final step in protecting it was to write the invention disclosure/plant patent application.

The invention disclosure/plant patent application followed standard formatting which included the following major sections: Technical Field, Background Art, Summary of Invention, Brief Description of Photographs, Detailed Description of Invention, Summary, and References (Appendix E). Providing evidence that the characteristics of the proposed “Upham Giant” were in fact unique was an essential part to the invention disclosure. I spent a lot of time researching both the scientific and hobbyist literature to determine the reported maximum height and cold tolerance for other *Musa basjoo* cultivars. I also needed to describe in great detail the protocol I
had used to asexually propagate the banana and include a photographic record of our successfully cloned individuals.

Upon completing the invention disclosure/plant patent application, I submitted the final document to my supervisor. To further support the invention disclosure/plant patent application, my supervisor at MTN plans to include the final growth data from the *Musa basjoo* “Upham Giant” for the 2005 growing season (collected in November). After these data are included, the invention disclosure/plant patent application will be sent to Miami University’s attorneys for review and final submittal. When the invention disclosure/plant patent application is officially filed, the invention will be protected for one year. For long-term protection of the invention, a full plant patent application will then need to be completed and filed.
CHAPTER 3: DETAILED DESCRIPTION OF SELECT PROMOTIONAL MATERIALS

Completing the promotional materials for MTN was not only the most time consuming project but also the most rewarding. I have selected the two main promotional documents, the plant booklet (Appendix A) and the mailer (Appendix B), to illustrate how I used my training in scientific and technical communication to complete these documents (both documents have been modified from their original size to fit the guidelines for this report). I specifically selected these documents because they illustrate how I applied the major principles that I learned in my MTSC coursework to complete a given project: audience consideration, information design, and project management.

The success of both promotional pieces depended on my understanding of the intended audience and how well I could connect with this group and share the appropriate information. For example, the booklet needed to be free of scientific jargon in order to appeal to average hobbyist gardeners while it also had to include detailed horticultural information that would enable those same gardeners to effectively care for their newly purchased plants.

Incorporating the principles of information design was also essential in completing the booklet and the mailer. These promotional documents had to be visually appealing and highly organized in order to spark a reader’s curiosity about MTN and encourage him or her to continue reading. I found that design was particularly important when planning the mailer since it might only be given a glance by the user before he or she decide to continue reading or toss it in the trash.

The final MTSC principle that I applied while completing these documents was effective project management. As is likely the case with all technical writers, I faced challenging deadlines: a last minute invitation to a tradeshow, and a miscommunication about the date of a promotional event significantly altered my deadlines for both the booklet and the mailer. I was rescued by being well organized and by using suggestions that I remembered from my project management course. With these tools, I eventually faced my tight deadlines and succeeded in producing my deliverables.

In this chapter, I discuss how I completed the booklet and the mailer and how the MTSC principles of audience consideration, information design, and project management guided my process through to completion.
Audience Considerations

Both the booklet and the mailer required careful planning in order to reach the target audience. The planning process began with meetings with MTN staff to summarize exactly who the targeted audience was and what type of information would they be expecting to find in such materials. We concluded that our target audience was made up of hobbyist gardeners who were familiar with the language used in gardening and horticulture magazines, yet they were not likely to be familiar with scientific terms, except for some Latin plant names. To find the proper balance between hobbyist and scientific language, we involved test readers from different backgrounds, as I describe below.

In order to predict what the audience would expect to find in such documents, I referred to promotional materials from other nurseries to pin-point what was typically included. I gathered that our booklet needed to include key information on environmental considerations (USDA Hardiness Zone limitation; sunlight, fertilizer, and watering requirement; and winter care). Since MTN specializes in cold-hardy plants, it was also important to highlight the success stories of tropical plants surviving in areas outside of their traditional Hardiness Zone to inspire readers to experiment with warm-climate ornamentals in their own gardens. The conventional components of the mailer were more straightforward: introduction to the company and its mission statement, plants and products offered, store locations, and upcoming events. Since this mailer was much shorter than the booklet, I knew I needed to stick to the essential information and avoid unnecessary text.

Prior to beginning the actual writing of the promotional materials, we also had to consider how the documents were to be used by the audience. For example, my objective for the booklet was for it to serve not only as an introduction to the cold-hardy plants in the Cincinnati area but also as a reference that the user could return to when he or she had a specific question. Therefore, I decided to organize the booklet into sections by the type of plant (palms, broadleaved evergreens, etc.) for easy access to plant-specific information. Initially, I thought the cultural care and winter protection should be included in the description of each species; however, I found that much of this information repeated, and it would improve the readability if this information had its own section, easily accessible via the table of contents. Organizational
details such as these involved thorough planning and outlining stages prior to drafting the body text.

Once I had defined my intended audience and decided on my organization, I was able to begin writing the text. For the booklet, I had a previously-used MTN “how to” handout as a guide, so I knew the specific species information for each plant. But on the mailer, I started from scratch concentrating on being as concise as possible because I did not want to overwhelm the reader with a lot of text.

Information Design

While writing the text, I began experimenting with design of the promotional materials. I referred to some of the design principles I had learned from my MTSC coursework in order to achieve an effective and visually appealing design.

Repetition

Robin Williams (2004) suggests that business materials should use a strong display of repetition “not only within pieces, but between all the pieces” so that the customer recognizes and associates all such materials with the individual company. In order to create this sense of unity among MTN’s documents, I repeated design elements such as the cover design and typeface selections in both the booklet and the mailer.

I also wanted to maintain a sense of unity throughout the multiple-page booklet itself. I was consistent with placing and composing the footers (including booklet title/authors and page number), and I included a single rule across the bottom of each page (Appendix A). The spacing and font choices for both the headings and text were also consistent throughout the document. Together, I thought all of these consistent features would give the readers a sense that they were reading a cohesive, multiple-page document.

In the mailer, I chose to repeat the green squares and rectangles design throughout the columns of text (Appendix B). I felt this feature of the design created a unique look that pulled together all the different components of the documents.

Alignment and Proximity

Successful alignment creates a clean, sophisticated look through achieving visual connections among design element on a given page (Williams 2004). I considered alignment when I selected
the design for the covers of both the booklet and the mailer. Both covers have a light green box for the title and a narrow, darker shape that continues down the left side of the title. I felt this design created effective alignment by drawing the reader’s eye from the title down to the remaining text on the bottom of the page. I also felt that the flush left alignment offered a sophisticated and professional look.

Effective proximity or making certain that related items are grouped close together, was also essential when designing these promotional materials. For the booklet, I organized the information so that general groups of plants would be in the same section. I also made certain that the beginning of any new section began at the top of the page. In the mailer, I organized the document so that similar information was grouped together within columns. For example, the “Plants and Products” section has its own column that is organized by major plant group and products. I made “Plants and Plant Products” the center column since this was the primary information I was trying to communicate to the reader (Appendix B).

**Typeface and Font Selection**

I recognized the need to select readable typefaces and fonts for both the booklet and the mailer. In regards to the booklet, I chose Bookman Old Style as the typeface for the main text and second-level headings because it is considered very easy to read — an important issue given that I had 18 pages of text (Williams 2004). I selected a Bold, Lucida Sans Unicode for my main headings because as a sans serif, it worked well to make my headings stand out on the page. Overall, I limited my typefaces to two, a sans serif and a serif, in order to keep the design simple yet visually appealing to the reader. I selected a font size that would ensure readability while also maximizing the amount of text present on each page (thus limiting printing costs). I decided on an 11-point font because it seemed to meet both of these parameters.

For the mailer, I selected a 12-point font, Lucida Sans Unicode, for the main text and a Bold, 22-point font Lucida Sans Unicode for the main headings. With a very limited amount of text, I thought the sans serif font would be readable and would create a very clean and professional look.
Project Management

One of the key lessons that I took away from my MTSC training in project management was to recognize the project parameters that govern every project and come up with a plan to manage these constraints. The five commonly referenced constraints that can affect the equilibrium of a project include scope, quality, cost, time, and resources (Wysocki & McGary 2004). In this section, I discuss what constraints influenced my promotional materials project and how I overcame these obstacles to complete the documents.

My most important constraint as I produced these documents was time. I originally had planned to begin the booklet and mailer after I completed a smaller project, the plant labels. But during the second week of my internship, MTN received exciting news: we were invited to take part in the Cincinnati Flower and Garden Show. The bad news was that all the deliverables were needed for the show by April 18th. That schedule gave me about a week and half to put together the booklet. A similar situation occurred with the deadline for the mailers. We planned to have them ready to give to the public as brochures at a second gardening show at the Cleveland Botanical Garden. A miscommunication regarding when this event would take place left me with only one week to complete the mailers.

In order to make continuous progress, I often divided my day among each of these projects. I simultaneously worked on both covers so that they appeared consistent with one another. When I finished a draft and gave it to my supervisor, I immediately changed gears to focus on another project while I was waiting for feedback. Prior to my internship, I had the tendency to want to work on a given project through completion and then begin something new; I never enjoyed starting another project when something else was unfinished. I soon realized that I needed to be making progress and providing my supervisor with early drafts of all of my projects or we would never have enough time for revisions. In other words, I realized the pressure of tight deadline that are a fact of life for technical communicators. Although I felt overwhelmed at times, I came out of this experience with a tremendous feeling of accomplishment and a better taste of what it is like to be a professional technical communicator.

Another critical constraint for these projects was cost. My objective was to make both the booklet and mailer appear as professional and polished as possible, while staying within my budget. In order to achieve this objective, I made several, small design decisions with the
booklet that ended up making a big difference in the overall quality and cost. First, I limited the color printing to the front cover only. Since the booklet was designed to be printed on legal-size paper and folded to form the booklet, the front cover and the back cover were on the same sheet of paper. With this design in mind, I added the red Miami University logo to the back cover since it would not warrant an additional color print charge. The logo added a splash of color to the back cover with no additional color printing costs and my supervisor really liked that added touch. I also selected a glossy white, heavy paper for the cover and a less expensive, non-glossy paper for the main text. The glossy paper gave the cover a professional look, and I only needed to purchase one sheet per booklet. With 200 hundred booklets to print, I think this decision went a long way in helping me stay within budget.

Another small design decision that made a significant impact on the cost was to print the table of contents on the back of the front cover. Initially, I had designed the booklet so that the back of the front cover would remain white and the table of contents would appear on the right page. I also originally maintained white space on the opposite side of the back cover page. When we printed an early prototype, however, we realized that this white space really was not making a significant statement in the overall design, and we could eliminate a full, legal-size page from our printing cost if we printed on the back of the front and back covers. In the end, I think this design decision reflects the many compromises that technical communicators make on a daily basis to complete their projects within given constraints.

The Final Edit and Public Distribution

To conclude discussion of the promotional materials project, I discuss in more detail the editing process that went into producing these documents and how they were eventually received at gardening trade shows.

The first step in my editing process was to email electronic copies to my main supervisor. Early on in this project, I knew I would be communicating drafts via email so I chose to complete both projects in Microsoft Word instead of Adobe InDesign, since the Adobe program was not on my supervisor’s computer, and he did not have experience working with it. Working in Microsoft Word allowed us to use the “Track Changes” functions to easily review edited drafts.
To create reader friendly and well organized documents, I sought editorial advice from both a content-area specialist and a professional technical communicator. As a botanist and an avid gardener, my supervisor at MTN was an excellent reader for content since he was extremely familiar with the subject areas. My writing mentor, Lisa Rosenberger, provided invaluable suggestions and comments regarding the design and consistency issues within the documents. She also pointed out terms that seemed “too scientific” for our intended audience and suggested adding definitions to aid the reader. This editorial process really helped improve the quality of the documents.

I was fortunate enough during my MTSC internship to complete a main project and be present to witness its reception by the public. The promotional materials I developed for MTN were distributed at two events during the summer of 2005: The Cincinnati Flower and Garden Show and a gardening seminar at the Cleveland Botanical Gardens. Although I was not present at these events, the staff members from MTN who were present felt that the documents were well received. Our collaborator, Kyle Natorp of Natorp’s Nursery, complimented MTN on the professional look of our marketing materials. Seeing these projects through from planning, writing, designing, editing, and finally printing really was the most significant accomplishment of my MTSC internship experience.
CHAPTER 4: ANALYSIS OF THE ORGANIZATIONAL COMMUNITY OF MTN AND ITS INFLUENCE ON MY WRITING PROCESS

As an intern at a newly-established company, I was in a unique position to witness a period in the evolution of MTN as an organization. From my experience with developing the logo to helping craft the first company brochure, I often felt like my contributions were helping to define a niche for MTN within the nursery industry. Reflecting on both my ecology background and my organizational communication coursework, I began to see the parallels between MTN and an organism adapting to its environment over time: the influence of environmental pressure, the need to define a niche and secure needed resources, and most importantly, the need to survive. In this chapter, I apply the metaphor of organizations as organisms (Morgan 1997) to the organizational community at MTN and discuss how working within an evolving organization influenced my writing process.

Brief Introduction to the Organism Metaphor

In the text *Images of Organizations* by Gareth Morgan (1997), various metaphors are applied to organizations to understand their structure, management practices, and communication strategies. The use of metaphor offers the reader a new way of thinking about the nature of organizations. By viewing an organization with different lenses, the metaphor helps readers develop a broad, fresh perspective about the structure and dynamics of their organization, offering insight as to how successful organizations should be designed and managed (Morgan 1997).

The organism metaphor of organizations states that organizations can be viewed as living systems that have needs that must be satisfied by the environment in which they exist (Morgan 1997). Like organisms, organizations can be viewed using ecological theories and models such as natural selection, competition, adaptation, and resource-dependency. Moreover, organizations are considered to be under the evolutionary pressure of selection; therefore, variation among organizations is necessary for selection to occur (Campbell 1969). Competition over scarce resources among organizations becomes critical for survival, and the ability to adapt to changing climates and environmental pressures is also essential for an organization to survive (Aldrich 1999).
By evaluating organizations as living systems, social scientists can determine the role environmental pressure and adaptation play in determining the success of various organizations. This ecological approach to organizational theory has been successfully applied to a range of disciplines including economics (Nelson 1994) and management of various industries (Hannan and Carroll 1995; Lessem and Palsule 1999).

The Organism Metaphor Applied to MTN

By applying the organism metaphor to MTN, I recognized the evolving nature of the organization and how it was adapting over time. As an organization, MTN is composed of research scientists who are collectively pursuing the commercialization of newly-developed plant biotechnology products. No member of the MTN staff has a formal education in business or management. Instead, the scientists of MTN have educated themselves through various real-world experiences on how a new start-up company should function and what it needs to succeed. That is not to say that professionals from the Miami Center for Innovation and Commercialization (MCIC) have not contributed to this effort. However, I found it quite interesting to see how a group of research scientists was evolving over time to develop and commercialize their intellectual property.

An organizational community of research scientists, such as MTN, is an interesting group to examine for various reasons. Many environmental pressures influence the organizational climate in a research setting including the ability develop innovative ideas, concepts, or products that address the current need within a given field. Because this need is always changing over time, the success of a research and development organization is often directly related to the ability of the organization to successfully adapt over time to the demands of an ever-changing environment. In this sense, MTN as an organization has a history of persevering through environmental changes and now has reached the point in its development where the focus has shifted from research to business objectives.

A key component to the organism metaphor is that organizations must “obtain a resource niche and outperform one’s competitors (Morgan 1997).” The momentum that led to the formation of MTN began with the realization that a highly specific market existed within the nursery industry for warm-climate plants in the Midwest. It was recognized that some
Midwestern gardeners spent thousands of dollars on palm plants for their landscapes, and they were willing to drive hours to purchase these plants. Although this group of specialty gardeners made up a small percentage of the total population of gardeners in the region, their business remained a significant resource niche that was not being fully exploited. By moving into this niche, MTN was able to secure the needed resources for survival.

Once a resource niche was established, MTN needed to outperform its competitors. The staff of MTN approached this task by incorporating new and interesting products onto their standard list of merchandise. For example, in addition to common banana plants that someone could likely find in a typical nursery, MTN is also going to offer a unique new variety of banana cultured at Miami University that has increased growth and vigor in cooler, Midwestern climates. By promoting plants that were field tested and investigated at Miami University, the researchers are adding credibility to the claim of cold tolerance and subsequently creating a competitive advantage over other nurseries.

Just as an organism has particular adaptations that increase its ability to gain resources and survive to reproduce, I think our organization also had “adaptations” that contributed to the overall success and survival of MTN. These adaptations were essentially the skills and the talent that our diverse staff brought to the organization. Whether it was laboratory skills or technical writing abilities, each contribution in some way added to the overall success of the organization. For my part, I updated and developed new promotional materials to carve out our niche and to allow MTN to successfully gain the resources needed for future survival. In addition, the invention disclosure/plant patent application that I wrote allowed an exciting new product to move closer to introduction to the market, enhancing our competitive advantage.

Overall, the organism metaphor of organizations is a useful lens for analyzing MTN because it reveals the adaptations required for MTN as a company to evolve. Adaptations that allow for successful competition for a resource niche will continue to contribute to the future success of MTN as an organization. In the years to come, it will be interesting to witness the continued growth of this organization as it expands its resource niche and pushes forth for long-term survival.
Influences on my Writing Process

My role as the first technical communicator among an organization of research scientists/entrepreneurs had a definite influence on my writing process. Breaking into this new environment with theories and principles of technical communication offered an exciting opportunity to fully apply my MTSC coursework to a range of projects while also introducing an organization to the benefits of technical communication. Moreover, I enjoyed discussing my rationale for a design or why I selected a particular format for a brochure. Explaining my decisions allowed me to explore my new identity as both a scientist and a technical communicator.

In taking the time to discuss my style and design decisions, I realized that my writing process was changing. I reviewed my work in light of the principles I learned in my MTSC coursework, and I made sure that I could communicate why I made the decisions that I did. As the only technical communicator at MTN, I felt an obligation to communicate my rationales, but I also felt an eagerness to talk about design principles and user testing to an audience that had not applied these tools. Overall, I think it was an excellent opportunity to share my new knowledge of technical communication with an organization that was eager to fully embrace it.

My internship experience not only shaped my writing process but I hope it also influenced my colleagues at MTN. In communicating design ideas and writing strategies, I hope that I introduced concepts that they will apply to future projects at MTN. Specifically, I think that the benefits of user testing were apparent to all those who took part in the process, and I hope that user testing will continue to be a tool used in creating documentation at MTN.

Final Thoughts

What I value most about my internship at MTN was that it gave me a true perspective of what it means to be a professional technical communicator. I managed multiple projects, adapted to tight deadlines, and effectively communicated with content-area experts to edit and complete projects. I experienced what I consider the “behind the scenes” details that complicate so many projects, such as selecting the best printing company that meets both budget and time constraints. These real-world experiences cannot be taught in the classroom; they must be experienced first hand.
The second critical lesson I will carry from my internship at MTN is that it is possible for me to successfully merge both my scientific background and my interest in technical communication. Projects such as the invention disclosure/plant patent application and instructional guides allowed me to be involved not only in the research and development process but also in the documentation process required to transfer such knowledge to outside audiences. Overall, this internship experience has given me the confidence to move forward in my career path, comfortable with my dual titles of scientist and technical communicator.
LITERATURE CITED


APPENDIX A. PLANT BOOKLET FOR MIDWESTERN TROPICS NURSERY
Warm-Climate Ornamental Plants for Tri-State Gardens: Selection and Care

David A. Francko, Professor of Botany & Associate Dean, Miami University, Oxford, OH

Cathlene I. Leary-Elderkin, Research Associate, Department of Botany, Miami University, Oxford, OH
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Introduction

Palms that will grow in Cincinnati? Bananas that are winter-hardy – outdoors – in Northern Kentucky? Crape myrtle varieties for Southwest Indiana? Maybe you’ve traveled to Florida or other locales in the Deep South and came home yearning to grow some of the “warm-climate” ornamental plants that define those landscapes. However, you probably thought it was an impossible dream.

Actually, although true tropical or subtropical plants cannot grow in our area, where winter minimum temperatures often drop below 0˚F, MANY palms, broadleaved evergreens, and other so-called “Southern” plants can tolerate the colder winters of our area. Yes, they WILL grow here!

This booklet briefly describes some key warm-climate ornamentals that define the Southern landscape and can be grown easily in USDA Plant Hardiness Zone 6 and the warmer parts of Zone 5, which includes Ohio, Indiana, and most of Kentucky.

Every plant included in this booklet has been evaluated by researchers at Miami University in Oxford, OH, for 5 to 7 consecutive winters – including some of the snowiest and coldest winters in recent years. A full list of over 300 species and cultivars that can be grown in our area may be found in Palms Won’t Grow Here and Other Myths. Warm-Climate Plants for Cooler Areas (Francko 2003, Timber Press).

Please visit our website: www.muohio.edu/coldhardypalms
Palms

Palms absolutely define the warm-climate landscape, and several species and varieties are adaptable to our area. We list them here roughly from most to least cold-tolerant. See winter-protection tips at the end of the booklet.

**Needle palm** (*Rhapidophyllum hystrix*)

Native to the southeastern US, the needle palm is the world’s hardiest palm—just as hardy as boxwoods and hollies. This shrub or clump-form palm has a short trunk armed with needle-like spines. It easily tolerates temperatures down to 0˚F and once established is undamaged at -8˚F. Even at -20˚F and lower, needle palms will survive with defoliation. Very old specimens in Zone 6 portions of Tennessee are approximately 8 ft. tall/broad. Full to partial sun is best, but they will tolerate some shade. They grow in all soils, but a lot of organic matter is preferred. For best winter performance, avoid direct winter wind.

**Dwarf palmetto** (*Sabal minor*) & **Louisiana Sabal** (*S. ‘Louisiana’)*

Second only to needle palm in cold hardiness, *Sabal* spp. exhibits little leaf burn down to 0˚F; exposed leaves are killed somewhere between -8˚F and -15˚F. However, the underground bud tissue recovers the following year, even in extremely cold weather, e.g. -24˚F in Wichita, KS. These palms are very slow growing, but once established produce 3 to 5 fan-shaped leaves per year. From juvenile strap-leaf stage to fan-leaf stage takes about 3-5 years. They can reach 4-5 ft. in height/spread in Zone 6b. Any relatively sheltered site, even very wet, is suitable for planting.

**Windmill palm**: (*Trachycarpus fortunei*/ *T. takil*)

Windmill palms probably represent the most cold-hardy of true palm TREES and are the first palm trees you see off the side of the road as you drive down I-75. They can survive temperatures down to -14˚F with defoliation in Oxford, OH. Leaf damage begins to occur at about 8˚F and defoliation at around 0˚F (~80% complete), but basal parts of the leaves remain green well below 0˚F. Mature, 8 to 10 ft. specimens can be found in the warmest parts of Zone 6 and are becoming common in Zone 7. If you want to try one of these in our area, pick a site out of the winter wind and close to a house or other source of warmth. Then, make sure to winter-protect (described later), especially for the first several years. These palms prefer full to partial sun and are very tolerant of clay soils.
Cabbage palmetto (*Sabal palmetto*)
The State Tree of FL and SC, this palm may prove almost as hardy as windmill palms. In our OH experience and that of TN growers, leaves remain undamaged down to low single digits, and some foliage remains green below 0°F. A few mature, trunked specimens are known in Zone 7a, and trees in these areas frequently survive subzero °F temperatures. They are rapid growers; even if partially defoliated, it will produce a crown of 4-5 large fan leaves by summer. It takes about 6-8 years after fan leaves form (in 3rd-year seedlings) to begin trunking. Although there are currently no trunked cabbage palms in our area, we believe these are indeed possible in excellent Tri-State microclimates (very sheltered areas near buildings). Plant untrunked, juvenile specimens; these look great even without their mature trunks, and it is doubtful a trunked transplant would have root system to survive even mild Zone 6-7 winters. However, once deeply rooted, they should be able to overwinter! These plants prefer full to partial sun in any soils, although not as tolerant of heavy clay as some other palms.

*Sabal* ‘Birmingham’
Believed to be a hybrid between *S. palmetto* and *S. minor*, one established specimen in Tulsa, OK is 8 to 10 ft. tall and broad, has only minimal leaf damage down to -3°F to -8°F, and has survived -14°F. *Sabal* ‘Birmingham’ may prove to be THE most cold-hardy tree palm! Although still very rare in cultivation, many specimens are included in Miami University’s collection. Slow growing but worth it, this palm is clearly hardy in Zone 6. Plant in full to partial sun and in any soil, although organic soils are best.

California Fan Palm (*Washingtonia filifera*) and Mexican fan palm (*W. robusta*)
These palms are only for true enthusiasts in our area. They are hardy outdoors only in Zone 8 and warmer, especially in areas with wet as well as cold winters. They usually defoliate around 12°F and 15°F, respectively. However, they can survive 0°F and even below with defoliation, and some small specimens have survived -10°F (El Paso, TX). In cold-winter areas, they are known as “chainsaw palms.” The dead growth is cut off in spring. With a lot of TLC, these palms have reached heights of up to 8 ft. in some Zone 6b areas. If they become defoliated, cut off dead leaves, wrap the trunk in a way that excludes water from entering the cavity at the top of the trunk, and mulch heavily. You may be rewarded with 8-10 new leaves the following year.
Broadleaved Evergreens

No landscape is complete without broadleaved evergreens, which keep their green leaves all winter. We are all familiar with boxwoods and some of the shrub hollies, but there are so many more choices!

**Southern magnolias** (*M. grandiflora*)
The archetypal tree of the Old South can be grown easily north of the Mason-Dixon Line! If you are observant, you’ll see many old specimens in Tri-State neighborhoods, yet many still claim that “those things won’t grow here” – a completely inaccurate statement! No tree is, in our view, more beautiful in all four seasons of the year. They produce terrific glossy green foliage and large fragrant flowers in late spring to early summer. Many readily available cultivars are adaptable to colder winter areas including ‘Bracken’s Brown Beauty,’ ‘Edith Bogue,’ and ‘D.D. Blanchard.’ ‘Little Gem’ is a dwarf form and an excellent choice for smaller areas. There are approximately a dozen other more ‘regional’ cultivars also suitable for Zone 6 and warmer parts of Zone 5. Once established, these cultivars are undamaged down to about -5˚F, and in 2004, area magnolias exhibited only minor leave bronzing at -14˚F.

TIP: Every decade or so, a truly harsh Tri-State winter can cause all or nearly all of the foliage of Southern magnolias and other evergreens to “bronze out” (turn brown). While unsightly, this does NOT mean the tree has died! In April, those dead leaves will drop off and be replaced by new foliage. Then you can easily trim off those few branches that were, in fact, killed back. They can tolerate any soils and should be planted in full to partial sun.

**Hollies** (*Ilex spp.*)
In addition to ‘China Boy’ and ‘China Girl’, the Foster holly is a great tree form for Zone 6 and is more formal than American holly. If you prefer American hollies, there are glossy-leaved versions available (‘Greenleaf’ and others). Another excellent specimen is ‘Nellie R. Stevens,’ a large shrub/small tree that is proving hardy in our area. The Burford holly is also an excellent specimen with very glossy leaves, a lot of berries, and hardiness in Zone 6. Dwarf Burford are exceptional at about 4 to 5 ft. Best in organic-rich soils and partial sun to partial shade, although most varieties will also do well in full sun.
Gold Dust plant (*Aucuba japonica* ‘variegata’).
These plants are excellent for great color in shady sites, but will also tolerate a fair amount of sun. Leaves hardy to about 0°F and even lower; killed-back leaves easily pruned in March. Grow to 4 to 5 ft. in Zone 6. Oxford specimens have endured since 1996 and some are now 6 ft. tall and broad. They prefer organic soils but will also tolerate clay.

Camellias
Camellias, like magnolias, are a mainstay in the South, but as recently as 10 years ago, you could NOT reliably grow them in Zone 6 and colder. That all has changed with the advent of cultivars that are bred for enhanced cold tolerance and do well in our winters. Camellias are available in both fall (October-December) and spring flowering hybrids. We suggest ‘Winter Series’ Ackerman hybrids (‘Winter’s Star,’ ‘Winter’s Waterlily,’ ‘Winter’s Charm’ and many others) for Zone 6 hardiness.

Also, small-leaf tea camellia (*C. sinensis* var. sinensis) performs well in Zone 6 and flowers in fall. This is the plant that is used to make green tea, so you can enjoy it as an ornamental and as a culinary plant – amaze your friends! For spring hybrids that are hardy, try ‘April Dawn’ and others in ‘April’ series.

Winter jasmine (*Jasminum nudiflorum*)
This spreading shrub looks beautiful cascading down a slope or over a wall. Enjoy yellow flowers in February and early March. During mild winters, they will flowers all winter long.

Heavenly bamboo (*Nandina domestica*)
Although not a bamboo, *Nandina* has bamboo-like foliage. It has excellent four-season interest and is very tough. Even when stems are killed back by -10°F or colder, it will regrow from basal areas and form a 3-4 ft. shrub the next year. These plants will perform best if planted in full sun to partial shade, but will tolerate heavy shade. They will even tolerate poor soils. Many good cultivars are now available in our area.
**Cherrylaurels (Prunus spp.)**
Cherrylaurels include several species of *Prunus*. Carolina cherrylaurel have been successful in the Oxford area for over 5 years. ‘Otto Luyken’ is a commonly available shrub form (3-4 ft.) that is very dense and has large lance-shaped leaves, good flowers, and a great evergreen habit in our area. Best if planted in full sun to partial shade and in any soils.

**Trifoliate hardy orange (Poncirus trifoliata)**
The hardiest member of citrus family, this small tree or dense hedge can survive in Zone 6. It has very sharp thorns and produces small orange-like (inedible) fruits in fall/winter. ‘Flying Dragon’ is an excellent dwarf cultivar with interesting contorted branches. These plants require full sun and tolerate poor soils.

**Southern live oak (Q. virginiana)**
It’s a myth that live oaks won’t grow in Zone 6. One in the Oxford area has survived -14˚F with minor branch die-back. Some large, old specimens in open areas of TN and OK survive in Zone 6b. They tend to defoliate around 0˚F, but remain evergreen or nearly so in our mild winters. Water oak (*Q. nigra*) and willow oak (*Q. phellos*) are popular “Southern” oaks that also will do well in OH (the former mimics live oak in its foliage and habit).

**Red-Tip Photinia (Photinia fraseri)**
Red-Tip can be found everywhere in the South. It may be killed back to near ground in our cold winters, but decent specimens (5 to 8 ft.) in Oxford have survived for 7 years with very little die-back. Enjoy the wonderful red new growth. They should be planted in full to partial sun.

**Japanese umbrella pine (Sciadopitys verticillata)**
This tree is hardy to Zone 5 and has the unique pine-like foliage of the *Podocarpus* tree, which is not hardy in our area.
Crape Myrtles

Another plant myth “crape myrtles don’t grow here” should be banished from your mind. Nothing could be farther from the truth! All cultivars of crape myrtles will grow as perennial shrubs in Zone 6 and most of Zone 5. In several cultivars, it is even possible to grow a small crape myrtle tree in Zone 6 with minimal winter protection. Crape myrtles flower on new wood so even when killed to the ground, a 3-7 ft. flowering shrub can be expected in the next growing season. There are many beautiful features to crape myrtles; 100-day-plus flowering cycle (late June - frost in Zone 6), beautiful fall color, and spectacular inner bark revealed by exfoliating outer bark. National Arboretum cultivars (Native American names) are most cold-hardy and almost immune from powdery mildew. We suggest purchasing a larger (5-7 gallon), thick-trunked specimens when possible for quicker establishment. One-gallon specimens will establish and flower in their first year but they are more difficult to overwinter in a very cold year.

Since flower color and shrub versus tree habit are two most distinctive features of crape myrtle varieties, we have organized the best choices below based on those features.

White-Flowering Large Shrubs

‘Acoma’ is best among the white-flowering shrubs; they are the most cold-hardy and are immune to mildew. Expect them to grow to approximately 8 ft. in the Tri-State and have exfoliating bark by their 3rd year. The wood of ‘Acoma’ crape myrtles is hardy to at least -8˚F and perhaps down to -14˚F in individual established specimens.

White-Flowering Tree Form

‘Natchez’ is gold standard white tree form in the Southeastern US, where it grows to 25 ft. In OH, we are finding that this excellent tree-form is also among the most cold-hardy of all crape myrtles. Miami University specimens planted in 2001 are now 8-10 ft. tall with 2” diameter trunks and have remained undamaged at -8˚F in both 2004 and 2005. We suspect that fully established 15-ft. trees are possible in our area in good microclimates and that these trees will survive about -12˚F with no wood loss. ‘Natchez’ has the finest exfoliating bark (a deep cinnamon color) and best flowering of any crape myrtle, regardless of color. *L. fauriei* ‘Fantasy’ is another very cold-hardy tree form with white flowers although it is difficult to find.
Red-Flowering Dwarf Shrubs

‘Victor’ is not a National Arboretum form, but the best true dwarf shrub (3 to 5 ft.). Ohio specimens produce spectacular red flowers all summer with no winter care at all.

True Red-Flowering Large Shrubs/Trees

‘Carolina Beauty’ performs well in Southwest OH and is almost as cold-hardy as the National Arboretum forms, but it must be sprayed for powdery mildew. ‘Dallas Red’ is perhaps the most cold-hardy true red tree form; it is being successfully grown in Zone 5b. However, it is difficult to find locally. New to our collection at Miami University in 2004 is ‘Dynamite’, with perhaps the best red color of them all and very prolific flowering. We do not yet know how cold-hardy this cultivar is.

Pinkish-Red or Lavender-Flowering Large Shrub/Trees

‘Hopi’ has a beautiful, deep pink-red flower and once established, is wood-hardy well into the teens to below zero in our area. It is perhaps the most cold-hardy National Arboretum selection and including ‘Natchez’, certainly the two most cold-hardy tree forms. A local Oxford specimen (10-ft.) has exfoliated bark that last froze at -24˚F in 1994-95, but since has been wood-hardy (including -13˚F in 1999 and -14˚F in 2004 and 2005). ‘Hopi’ flowers from late June to late October. Other varieties include ‘Zuni’, a nice purple-lavender large shrub available everywhere, and ‘Centennial Spirit’, a cold-hardy specimen (at least to -4˚F) with purple-red flowers that perform well in Zone 6b (northern OK). Also, try ‘Tonto’, a widely available specimen that is wood-hardy to about -6˚F and grows to 5-6 ft. tall by summer, even if killed back. Its flowers are as close to red as anything but a true red. This is another good performer for residential landscapes; it should form a 10-12 ft. tree. Overall, the pinks, reds, and lavenders all look great with ‘Acoma’ or other whites.
Bananas and Other Interesting Plants

There are many interesting warm-climate plants that are deserving of space in your garden. Here, we focus on a few that are truly spectacular – the kinds of plants that will cause your neighbors to do a double-take when they walk past your yard!

First and foremost in this group are the bananas. Many people in our area already grow tropical bananas in containers that they take indoors during the winter. Or they dig the whole plant up from the planting bed and overwinter it in the garage. It’s worth the effort because aside from the palms, NOTHING says “tropical” like a banana.

But you need not go through all this effort to have banana plants in your garden. A few select varieties of temperate bananas are root-hardy in our area – in the ground, all winter long.

**Japanese fiber banana** (*Musa basjoo*)

This is the gold standard of temperate bananas and by far your best choice for carefree survival in our area – with very limited winter protection (leaf mulching). Native to the southern islands of Japan, *M. basjoo* typically reaches 8-10 ft. in height in a single growing season. With excellent soil, lots of fertilizer (bananas are heavy feeders, especially nitrogen), and plenty of water, you easily can grow a 12-ft. specimen with beautiful 6-foot leaves and a pseudostem (looks like a stem but is actually a tightly packed leaf base) 6 inches in diameter at the base. We currently are developing a new cultivar in Oxford that reaches over 18 ft. in height each year. These plants produce vegetative offshoots called suckers, or “pups,” a few feet away from the parent plant. Pups can easily be transplanted, producing a ready source of new material for you or a friend.

These bananas are grown for their foliage. They do produce small inedible fruits but only on second-year growth – something that is not possible in our climate without extreme winter protection.

Folks are growing this species with success in WISCONSIN and other areas as cold as Zone 4. Even without a top dressing of mulch, roots are hardy to at least 0˚F. With mulching, they almost always survive down to -
20°F. Take the leaves off in mid-March and watch them begin to shoot up almost immediately (be ready to recover with leaves if a frost threatens).

No banana plant’s stems and leaves will survive in our cold climates, but even here, *M. basjoo* is a champ. The leaves will take some frost and the pseudostems survive down to about 23°F. We have a picture of a Miami University specimen covered with an early snowfall and doing fine!

All bananas like good winter drainage, so even though they will grow in any soil, make sure they are not standing in soggy ground over the winter; otherwise, they will rot and die. Plant them in full sun and in a wind-protected area if possible.

**Pink Velvet Banana** (*Musa velutina* var. ‘Pink Velvet’)

What if you want to grow a FLOWERING, FRUITING banana in your area garden? Then your choice is an easy one. A truly beautiful banana, *M. velutina* ‘Pink Velvet’ gets its name from the reddish-pink, torpedo-shaped flowers and 3” to 4” fruits (inedible, alas, but pretty cool nonetheless) it produces each July starting in its first growing season. This is the only commonly-available species of banana that sets fruit on NEW growth, meaning that you do not need to overwinter a large part of the plant in order to get fruit. These plants are much smaller than *M. basjoo* and so can be grown in smaller spaces. Expect them to reach about 6 ft. in height.

Now…nothing is perfect, and this species is nowhere near as cold-hardy as *M. basjoo*. We have had limited success in overwintering ‘Pink Velvet’ in the ground in Oxford, but those trials were conducted in 2004 and 2005 when winter minimal temperatures were much colder than average and conditions were very wet. Other enthusiasts report good success in overwintering these bananas outdoors down to about 0°F and even below.

TIP: In our region, we recommend a play-it-safe plan – these are plants that sucker profusely. Dig a small sucker or two out of the ground in late fall and overwinter those in your garage. That way, if you do lose the parent plant, you have a new plant ready to start the following spring.
Bamboos

Bamboos grace many a subtropical garden, but again, many species are truly temperate.

Running bamboos can be a problem, but these problems are readily overcome (see Francko book, *Palms Won’t Grow Here and Other Myths. Warm-Climate Plants for Cooler Areas* or any reputable gardening book). Clump bamboos don’t spread and function much like ornamental grasses. Organic soil is best but some success is possible in clay.

There are many possibilities for hardy running bamboos. Several members of the genus *Phyllostachys*, including *P. aureosulcata* (yellow-groove bamboo) and *P. nuda*, are hardy in our area. When mature, they can produce culms (canes) up to 20 ft. in height. In cold winters, these species may lose their leaves. Canebrake bamboo (*Arundinaria gigantea*) is the only bamboo native to the US, including extreme southern OH and much of KY. It is evergreen through most Tri-State winters and grows up to 10 ft. in height. It is relatively non-invasive. Plant running bamboo in full sun to partial shade.

Members of the genus *Fargesia* are the best clump-form bamboos for Zone 6. *F. nitida* (fountain bamboo) and *F. murielae* (umbrella bamboo) grow in shady areas and reach perhaps 5 ft. in height.

Other Choices

A variety of yucca, including some large trunking forms, can be grown in Ohio. Another possibility is Chinese silk tree/mimosa (*Albizia julibrissin*), a very tropical looking deciduous tree. Cactus/succulent lovers can try *Opuntia humifusa* (Eastern prickly-pear), native to the Mid-Atlantic, which has spectacular yellow flowers. For shady locations, full sun, or even poor soils, the cast iron plant (*Aspidistra elatior*) is root-hardy to at least -14˚F (with mulching).
Cultural Tips and Winter Protection

Nearly any Tri-State soil type is suitable for the plants described above but organically enriched soils work best. Be cautious of drought stress in the first 2-3 years. Plant as you would any other normal tree or shrub in our area. We recommend a heavy application of a balanced, complete, slow-release granular fertilizer once in mid-Spring.

The plants described in this booklet do NOT require exotic winter protection (mini-greenhouses and the like). However, modest annual winter protection (heavy mulching with deciduous leaves or straw to a depth of 1 foot) is a must for best foliar protection and preservation of woody material. Mulch your plants at the same time you would mulch roses and other tender vegetation – generally early to mid-December in our area, and gradually remove mulch in early spring. Bananas require heavier mulching (up to about 18”). It is also helpful to spray the foliage of evergreens with antitranspirant sprays like “Wilt-Pruf” sometime in mid-December. Snow is NO problem – it is actually a great insulator.

One important note for palms: When water collects in the crown cavities of palms, freezing and thawing can cause crown rot disease, which kills more palms in cold-winter areas than cold itself. Copper fungicide sprayed into crown cavities in early and late winter greatly reduces crown rot disease. Purchase liquid concentrate (usually copper hydroxide) from any garden center.

By Fall 2005, look in the marketplace for new devices called “palm protectors” that have been developed at Miami University. These devices keep precipitation from collecting on the palms and help retain mulch, thereby adding at least a full USDA Zone equivalent to normal cold hardiness!

Another winter care tip: When you’ve visited Florida or Las Vegas, you’ve probably noticed that many of the palms and other exotic plants were covered with holiday lights. This is partly to create a nice effect in the night landscape, but also to enhance cold hardness. Lights strung around the trunk of a palm and amongst the foliage can add several degrees of cold hardness!

You do NOT need to use lights for needle palms or dwarf palmettos. But if you are growing a windmill palm or other tree palm in our area, lights are a must for those really cold nights. For the BEST protection of your valuable palms during subzero cold, turn on the lights and cover the plant with a sheet or blanket. You’ll need
to do this maybe one night a year in most winters, but you'll be rewarded by a palm that largely retains green foliage even when the temperatures get down to around -15°F!

In spring, simply prune off any damaged leaves/foliage.

**Note:** All hardiness information included in this booklet is for established plants (3 years in ground minimum).
APPENDIX B. MAILER FOR MIDWESTERN TROPICS NURSERY
Our Mission

At Midwestern Tropics Nursery, our mission is to provide the highest quality plants and related plant products to help you create the home landscape you have been dreaming about. From bananas to palms, we are your full service provider of warm climate plants that are tolerant of cold, Midwestern winters. Our plants and plant products have been researched at Miami University for over seven years, and we are confident that you will be fully satisfied with our diverse selection and knowledgeable staff.
Plants and Products

Midwestern Tropics Nursery has a wide variety of warm climate plants that can be easily incorporated into your home landscape. Some examples include:

**Palms**
- Needle Palms (*Rhapidophyllum hystrix*)
- Dwarf Palmetto (*Sabal minor*)
- Cabbage palm (*S. palmetto*)
- Sonoran palmetto (*S. uresana*)
- Texas palmetto (*S. Texensis*)
- Louisiana Dwarf Palmetto (*S. ‘Louisiana’*)
- Windmill palm (*Trachycarpus fortunei*)

**Bananas**
- Japanese fiber banana (*Musa basjoo*)
- ‘Pink Velvet’ (*Musa velutina*)

**Other Cold-hardy Favorites**
- Crape Myrtle varieties
- Gold dust plant (*Aucuba japonica*)

**Products**

Palm protectors were developed at Miami University and have been shown to add at least a full USDA Zone equivalent to normal cold hardiness. These devices work by preventing precipitation from collecting at the crown thus reducing crown rot disease. They also help retain mulch which serves as an insulator to the dormant plant.

Just think— the Southern landscapes you have always admired are possible in the Midwest. Yes, many palms, broadleaved evergreens, and other “Southern” plants can survive our cold winters!

Explore the possibilities.

Midwestern Tropics Nursery
Instructional Guide for Preparing for Aseptic Culture Work

Sterilize work area

1. Put on latex gloves.

2. Rinse gloved hands with 70% alcohol.

3. Wipe entire hood down with 70% alcohol using a paper towel.

Sterilize tools

1. Soak tools in 95% alcohol for at least 5 minutes.
2. Place a pair of forceps in the bacinerator for 15 seconds.

3. Place the sterile forceps on bench.

4. Repeat sterilization process for all tools (forceps and scalpels).

5. Rest the sterile tools on sterile forceps on the bench.

**NOTE:** If a scalpel blade is dull, replace it with a new blade. Carefully remove old blade with forceps and discard it in the “sharps” box. If this is your first time replacing a blade, please have an experienced member of the lab demonstrate this process prior to attempting it yourself.

6. When you have completed your work, turn off the bacinerator and wipe down the hood with 70% alcohol.
Appendix D. Descriptive Outline for Invention Disclosure/Plant Patent Application Produced for Midwestern Tropics Nursery

I. Technical Field
   i. Similar to an abstract
   ii. Briefly describes the invention and forecasts the document

II. Background Art
   i. Introduces the field in which the new invention is emerging
   ii. Includes a literature review of the pertinent publications related to the invention and/or similar inventions in the specific technical field

III. Summary of Invention
   i. Fully describes the invention
   ii. Includes specifically why it warrants protection

IV. Brief Description of Photographs
   i. Presents and describes photographic evidence supporting the claims of the invention

V. Detailed Description of Invention
   i. Similar to the Methods and Results sections of a scientific paper
   ii. Includes a complete description of lab procedures or processes that led to the invention
   iii. Presents results of experiments that support the claim of the invention

VI. Summary
   i. Summarizes invention
   ii. Includes information about continuing research efforts related to the invention

VII. References
   i. Lists all of the citations referenced throughout the document.