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IPPS European Exchange 2023

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Summary

This paper discusses the IPPS-SRNA Early-Career Professional International Exchange Program with the IPPS-European Region took place in 2023. The exchange proved to be an unparalleled, transformative journey—one I consider among the most profound and impactful in my life. The European Region's annual meeting took place in Køge, Denmark, encompassing other cities such as Copenhagen, Denmark and Lund, Sweden. I was able to tour nurseries in Germany, Denmark and Sweden.

INTRODUCTION

In 2021, I attended my first IPPS Southern Region Annual Meeting in Mobile, Alabama, and was honored to receive the Vivian Munday Young Horticulture Professional Scholarship. Engaging in various roles, from operating the registration desk and assisting during the auction to participating in bus tours and nursery visits - allowed me to connect with numerous members and explore the diverse offerings of IPPS. Conversations with Donna Foster and other committee members during the conference introduced me to the Charlie Parkerson Student Research Competition and the Early Career Professional International Exchange Program. By the meeting's end, I decided to become a lifelong IPPS-SRNA member.

In the following year, 2022, I was again awarded the Vivian Munday Young Horticulture Professional Scholarship. Additionally, I presented a poster and delivered an oral presentation in the student research competition, earning second place among the finalists. This experience heightened my confidence, motivating me to apply for the exchange program. In 2023, I was privileged to be chosen as the Southern Region representative for the Early-Career Professional International Exchange Program with the European Region. The exchange proved to be an unparalleled, transformative journey—one I consider among the most profound and impactful in my life. I extend deep gratitude to the organization and mentors who facilitated this opportunity.

In 2023, the European Region's annual meeting took place in Scandinavia, encompassing cities such as Copenhagen, Køge, and Lund. Embarking on my journey from Tampa International Airport on the evening of October 6, 2023, I had layovers in Chicago O'Hare and Frankfurt International before reaching my final destination, Hamburg Airport, in the late afternoon of October 7. I was scheduled to meet my host, Louise Heissel, whom I had only communicated with through WhatsApp—or so I thought. Upon arrival, we both realized we had met in person the previous year at the 2022 IPPS Southern Region conference, where she served as the European exchange professional. Sharing a laugh, we loaded her vehicle and departed for her home in Barmstedt, Germany.

While in route to Barmstedt, I could not help but observe the striking contrast in the landscape. Gone were the familiar pineland forests of North Florida that I had grown accustomed to over the past four years. Instead, I found myself immersed in a vibrant, green environment reminiscent of my childhood in Michigan. Regrettably, as we approached Barmstedt, the sun descended toward the horizon, leaving no time for stops on our journey to my new home. Consequently, I missed the chance to explore along the way but was compensated with the opportunity to savor an authentic homemade German meal. During this time, engaging discussions unfolded on topics ranging from education and politics to healthcare. Due to Louise's Danish background, I acquired a distinctive outlook from her experiences residing in both Denmark and Germany.

GERMANY

On Sunday morning, an unusual scene unfolded as families, individuals, and pets leisurely strolled, jogged, and cycled around town, a reflection of the widespread closure

of stores in Germany on Sundays. Discussing this with Louise, I discovered that this practice is not rooted in religion, contrasting with my local town, where Sunday alcohol sales are restricted due to religious practices. With everything closed, we seized the opportunity to explore a place of personal interest—the Future Climate Tree Exhibit sponsored by the German nursery Lorenz Von Ehren (**Fig. 1**). This exhibition delved into the vital role of urban trees in cities, regulating microclimates, providing shade, and filtering air and soil emissions. Urban trees also double as habitats for wildlife. Despite their merits, urban trees grapple with challenges such as soil compaction, climate-related issues, pollutants, road salt, and artificial light. Climate change further compounds these difficulties, impacting established species and inviting harmful organisms.

Figure 1. A snapshot at the beginning of the Future Climate Tree Exhibit.

The exhibit highlighted notable urban tree species, including *Acer campestre* (field maple), *Carpinus betulus* (common hornbeam), *Cornus mas* (Cornelian cherry), *Liquidambar styraciflua* (sweet gum), *Quercus palustris* (swamp oak), and *Tilia europaea* (common linden). Recognizing the escalating importance of urban trees in addressing climate change, the exhibition advocates for a thoughtful approach to species and site selection, ensuring their adaptability to changing urban environments. This strategic focus promises long-term benefits and reduced municipal maintenance costs. The significance of this subject was deeply personal to me, given that my PhD research centers around these very issues.

Our second destination of the day was Deutsches Baumschul Museum, the German Tree Nursery Museum, in Pennenberg, Germany, where we attended a presentation by Dr. Andreas Wrede on the impact of climate change on the future ranges of woody plants (**Fig. 2**). Dr. Andreas Wrede serves as the Head of Experimental Engineering at the Schleswig-Holstein Chamber of Agriculture (**Fig. 3**). I faced a language challenge since the presentation was conducted solely in German. However, in the field of horticulture, where scientific names hold significant importance, I was able to decode content by relying on these names and identifying words that resembled English. To my surprise, I was able to grasp the main points of the presentation and looked forward to discussing it further with Dr. Wrede after the session. In his presentation, he discussed potential tree selections suitable for urban

environments, taking into account the impact of climate change and the promotion of biodiversity (**Table 1**). The emphasis was on trees that, while not necessarily native, had to exhibit resilience to withstand the challenges posed by climate change. Furthermore, the ranking of trees was influenced by the number of species they could support, with a higher ranking assigned to those fostering greater biodiversity.

Figure 2. The entrance to Deutsches Baumschul Museum (German Tree Nursery Museum).

Figure 3. Having a conversation with Dr. Andreas Wrede regarding his research.

Table 1. Trees being considered by Dr. Andreas Wrede regarding the influence of climate change on the future distribution of woody plants.

Urban Green North	
Trees Tested	
Acer buergerianum	Trident Maple
Acer monspessulanum	Montpellier Maple
Alnus x spaethii	Spaeth Alder
Carpinus betulus 'Lucas'	Upright Hornbeam
Celtis australis	European Nettle Tree
Fraxinus ornus 'Obelisk'	Manna Ash
Fraxinus pennsylvanica 'Summit'	Summit Green Ash
Ginkgo biloba 'Fastigiata'	Fastigiata Maidenair Tree
Gleditsia triacanthos 'Skyline'	Honey Locust
Liquidambar styraciflua	Sweet Gum
Magnolia Kobus	Kobushi Magnolia
Ostrya carpinifolia	European Hop Hornbeam
Parrotia persica	Persian Ironwood
Platanus orientalis	Old World Sycamore
Quercus cerris	Turkey Oak
Quercus frainetto	Hungarian Oak
Sophora japonica 'Regent'	Japanese Pagoda Tree
Tilia tomentosa 'Brabant'	Silver Linden
Ulmus 'Rebona'	Rebona Elm
Zelkova serrata 'Green Vase'	Green Vase Japanese Elm

Our final destination for the day was Baumschule Mohr, the initial German nursery where Louise lived when she first moved to Germany. Thomas, the owner, exclusively communicated in German and claims full credit for teaching Louise the language—a fact they found amusing every time he brought it up. This nursery specializes in tree and shrub production and operates a potting machine for efficiency. Their two-person potting machine handles tasks such as filling pots, drilling holes, incorporating bark as a weed suppressant, and loading carts. One individual placed the liner

into the drilled-filled pot, while the second person compacted the soil around the liner. For the remainder of our visit, facilitated by Louise as a translator, we delved into discussions about the distinctions between the nursery industries in Germany and the United States. Topics ranged from employee wages, product pricing, and quality standards to production timing, horticulture education, and the aspects of selling or inheriting nursery companies. Mohr Nursery's ownership is currently transitioning from Thomas to his son, Torben. As Torben prepares to take the reins of Mohr Nursery, the transition marks both a generational shift and a continuation of the nursery's legacy.

On Monday morning, we traveled to Bunk Jungpflanzen Aus Samen, a multi-generational nursery specializing in cultivating young plants from seeds located in Elmshorn (**Fig. 4**).

Figure 4. Nursery and delivery trunk for Bunk Jungpflanzen Aus Samen.

Bunk stands out by concentrating on rare and unique species exclusively propagated by seed. Their mission goes beyond ornamental value, emphasizing the identification of species with additional attributes, including medicinal and edible qualities. The nursery is committed to producing high-quality, robust, and cold-hardy tree species. Operating on an extensive scale, the nursery religiously cultivates 56 species sourced from seeds worldwide. The germination process begins with seeds sown in a complete sand mixture on the ground within a hoop house. Certain species will sprout within weeks, while others require up to two years of winter dormancy before germinating. Following germination, the seedlings are moved to trays, allowing them to grow sufficiently before being transplanted into finished 4-in containers. Some selected seedlings may be designated for in-ground production. These finished 4-in containers are sold to growers, who up-pot them to 1 or 3 gal containers before distributing them to wholesale purchasers.

Our subsequent destination was Kordes Jungpflanzen, a multi-generational liner production nursery situated in Bislon. Their guiding principle was "quality from the beginning." As I strolled through the expansive 37 hectares of production, the meticulous time and care invested in their products became evident, ensuring a high standard of quality. Specializing in sustainable and environmentally friendly cultivation - they offer a diverse range of over 1000 varieties of ornamental trees and shrubs. A notable recent accomplishment includes the introduction of a new hydrangea named "Dolly Buster," named after the size of its flowers (**Fig. 5**). In conversation with one of the owners, Christian Kordes, I learned that the decision to name this hydrangea "Dolly Buster" was a significant and somewhat controversial move within the conservative German horticulture community, given that Dolly Buster is best known for her work in adult films. Nevertheless, despite the gamble, the benefits have been substantial.

Figure 5. Kordes Jungpflanzen newly released hydrangea “Dolly Buster”.

As we bid farewell to Germany and made our way to Denmark, I took a moment to contemplate my experiences. Our exploration of German nurseries provided a captivating journey into the intersection of horticulture, environmental consciousness, and cultural nuances. The Sunday morning stroll revealed not only distinctive closure practices but also underscored the profound impact of urban trees on the environment, a theme echoed throughout the enlightening Future Climate Tree Exhibit. Dr. Andreas Wrede's presentation added a layer of international collaboration, emphasizing the global importance of addressing climate change in the horticultural domain. Our visit to Baumschule Mohr marked a symbolic transition in ownership and horticultural approaches. Moving into Monday, Bunk Jungpflanzen Aus Samen and Kordes Jungpflanzen showcased the meticulous care and innovative spirit inherent in German nursery operations. The introduction of "Dolly Buster" stood as a testament to the industry's adaptability. This immersive experience not only enriched my understanding of global horticultural practices but also emphasized the interconnectedness of environmental stewardship on a global scale.

DEMARK: PART ONE

Continuing our journey to Denmark, we concluded our travels with a final visit to a local garden center (**Fig. 6**). Stepping inside, I was greeted by a scene entirely unlike any I had ever experienced. While garden centers in the United States typically feature a range of plants, from houseplants and annuals to perennials, fruit-bearing trees, and ornamental shrubs - the Danish Garden Center took me by surprise with its unique offerings. Alongside the expected variety of tulip bulbs, the establishment boasted an array of merchandise - including clothing, home goods, interior design items, and exotic species like palm trees. Still in a state of astonishment, we loaded our purchases into the car and continued on our way through Denmark.

Figure 6. Visiting a local garden center on our way to Denmark.

We spent the night at Louise's childhood home, a working farm dating back to the 1880s. I had the privilege of touring their property, discovering that they cultivate blackberries, raspberries, row crops, and, to my delight, Christmas trees. The evening unfolded with a traditional Danish dinner, during which I experienced bone marrow for the first time. Engaging in delightful conversation mirroring topics of my initial night in Germany, we enjoyed each other's company. As the night drew to a close, I joined Louise in crafting description sheets for the IPPS European plant auction. The next morning, we set out early with the aim of making a specific stop before heading to our hotel.

To my surprise, a visit to a seed company had been arranged. We explored Levinsen Treeseeds, a renowned establishment owned by Ulrik Nyvold **(Fig. 7**).

Figure 7. The initial drawing shelf for pine species at Levinsen Treeseeds.

Levinsen A/S specializes in marketing seeds for the cultivation of high-quality plants for forestry, ornamental purposes, Christmas trees, and greenery. While its primary market is in northern Europe, the company operates globally, with activity spanning most parts of the world. They personally undertake the entire seed process—from collecting and cleaning to drying, stratifying, and conducting germination tests on all species. While touring their impressive facility, I gained a profound appreciation for the extensive efforts required to produce top-notch seeds. The most intriguing aspect was the cold stratification room, where the company uses custom-made containers for the stratification of specific seeds. Unfortunately, I cannot provide details about the equipment used in this process, and regrettably, photography was not permitted inside the facility.

Upon arriving at the hotel, we joined a small group of early arrivals for a quick tour of Køge. Our exploration led us to Køge Church Cemetery, an experience that might be perceived as somewhat unconventional in the United States (**Fig. 8**). However, in Denmark, cemeteries are not just considered resting places for the deceased but are seen as public spaces where people can appreciate gardens.

Figure 8. A traditional Danish cemetery offering views of plant varieties and gardens.

During this visit, I engaged in discussions with fellow society members about the distinctions between Danish and American cemeteries. One significant difference was the payment structure for plots. In the US, you purchase a plot and can retain it indefinitely. In Denmark, plots are rented for 25 years, and if payments cease after that period, individuals are removed from the plot. Another noteworthy difference was the incorporation of personalized gardens on each plot. On their rented plots, family members have the freedom to plant any species of their choice. An intriguing aspect of these cemeteries is that some individuals utilize them for species identification. Following our visit to the cemetery, we returned to the hotel to ensure a restful night's sleep before the IPPS 2023 European tour commenced.

IPPS EUROPEAN REGION CONFERENCE

The 2023 IPPS European Region Conference took place from October 11-13, featuring two days of bus tours and a third day dedicated to presentations. The conference's main theme was "It’s All About the Roots," with both the tours and presentations focusing on the soils and nutrients essential for cultivating robust and healthy roots. One of the significant challenges confronting Scandinavia and other European nations is the widespread use of peat moss as a soil medium. Numerous nurseries continue to rely on 100% peat moss soils for plant production. In contrast, in the United States, we have transitioned to diverse soil mixtures that incorporate elements such as bark, sand, perlite, compost, and more. The

exploration and experimentation with alternative mixtures in Scandinavia became apparent during our nursery tours.

The conference kicked off with our initial bus tour visit to Stångby Plantskola, a Swedish nursery that specializes in park trees, avenue trees, solitary bushes, and larger fruit trees. What stood out to me about this nursery was its distinctive approach to selecting plants for sale. They conduct extensive testing of tree species in south, central, and northern Sweden, ensuring survivability for all clients. Additionally, they employ two unique pots to enhance root growth: a root control container (**Fig. 9a**) and an open-bottom custom pot (**Fig. 9b**). Both containers were designed to provide roots with better access to air - resulting in a more robust root system at a faster pace. The key distinction is that the root control container has a fixed size, whereas the open-bottom custom pot comes in sheets and can be cut to fit specialty root balls.

Figure 9. A large root control container (A) and an open bottom custom container (B).

Our second stop in Sweden was a nursery with two distinctive specialties. Spender Plant is renowned for its sales of E-Plants (**Fig. 10a**) and the customized creation of compost tea (**Fig. 10b**). Additionally, they concentrate on technical solutions, leaf analysis, leaf fertilizers, organic fertilizers, and regenerative agriculture. You might be curious about E-Plants—are they electric plants? In fact, E-Plants are plants with seeds sourced, produced, and sold exclusively in Sweden. Their E-Plants encompass a wide variety, including trees, shrubs, perennials, and groundcovers. Regarding the compost tea, it takes three days to brew one batch. They incorporate kelp, calcium, and various acids to adjust the pH. Once completed, the compost tea is applied all at once, with applications occurring monthly.

Figure 10. A display of a few E-plants sold by Spendor Plant (A) and the compost tea container (B).

Our final destination in Sweden was Klinta Trädgård, owned by designer and nurseryman Peter Korn (**Fig. 11**). If you seek a garden and nursery that will leave you astounded, this is the place to visit. Peter's mission revolves around the mindful use of plants in harmony with the nature of the soil. How does he achieve this? He cultivates all his perennials and grasses in a soil mixture of sand and mycorrhiza, with no additional nutrients added. Initially, this approach may seem contrary to conventional teachings, as many of our members mentioned. However, this nursery serves as proof that it can be successfully accomplished. Peter utilizes these plants as bare-root transplants for his landscape designs, personally overseeing the installation. Moreover, he conducts research on dependable plants for green roofs and green walls (**Fig. 12)**, primarily focusing on perennials and succulents throughout his experiments.

Figure 11. Plants at Peter Korn's Klinta Trädgård growing in a soil mix of complete sand and mycorrhiza.

Figure 12. Examples of Peter's researching involving green walls and green roofs.

Our bus tour in Denmark commenced with a visit to Gunnar Christensens Planteskole, where we explored the nursery and engaged in a series of workshops. The workshops covered topics such as alternative growing media, fertilizer, pot covers, willow compost, peat & green transition, peatless growing, and CO_2 reduction in the production of pots. At Gunnar Christensens, they cultivate over 1.5 million plants annually across a 25-ha area and employ around 70 individuals during peak season. Their plant range includes container-grown varieties such as berry bushes, ornamental shrubs, perennials, herbs, and strawberries. The nursery places a strong emphasis on water conservation, collecting rainwater from greenhouse roofs and extensive potting areas for reuse. With significant irrigation capacity, they can water the entire nursery during the early morning hours, minimizing the impact of wind and evaporation. The workshops provided insights into container trials experimenting with various soil mixtures, the use of eco-friendly plant tags and recyclable pots, and the application of biostimulants to enhance soil and substrate biology. During the garden tour, we explored the greenhouse, walked the property layout, and observed the current plant varieties under cultivation. The highlight of the tour was strolling through their trial garden **(Fig. 13**), where I encountered plants typically associated with warmer climates like Florida, including agave, southern magnolias, and coreopsis.

Our next stop was Nordic Harvest (**Fig. 14)**, a vertical hydroponic farm with a mission to establish a genuinely sustainable food production system and return agricultural land to nature. They achieve this by daily care for the plants, guiding them from seed to harvest to ensure optimal crispness and flavor. Sowing and reaping take place every single day. The team consists of experts in nutrition, water management, biology, as well as cooks, technicians, and computer scientists. The plants are grown on 14 floors in nutrient-enriched water under LED lights with controlled temperature, humidity, and CO_2 levels. The closed environment is free from pests, spores, bacteria, and pollution, eliminating the need for harmful chemicals. This enables the plants to focus exclusively on energy-efficient, large-scale growth, resulting in flavorful and nutritious produce. Their product range includes crisp salad, mixed green salad, baby iceberg, baby romaine, thyme, baby kale, and baby arugula. Currently, Nordic Harvest is gearing up to expand the farm, aiming to quadruple its production capacity.

Figure 13. The species included in Gunnar Christensens.

Figure 14. The growing room of Nordic Harvest.

The day's final destination was Pometet, a garden and research center affiliated with the University of Copenhagen's Department of Plant and Environmental Science, dedicated to preserving varieties for NordGen – the Nordic Genebank. During my visit, I discovered that "pomet" refers to a diverse assortment of fruit tree and shrub varieties, taking its name from the Latin term "pomum," signifying "fruit on trees." Pometet hosts an extensive array of varieties, with a notable focus on collecting apple varieties locally and internationally (**Fig. 15**). However, their collections span a wide range, covering all of Denmark's commonly grown fruit species. Beyond research and cultivation, their mission extends to fostering awareness and knowledge about the varieties and fruit species present on their property.

Figure 15. A display of all the apple varieties grown on Pometet property.

On the final day of the conference, October 13th, presentations took center stage. Poul Petersen of Overdam Planteskole offered insights into Naturalistic planting methods, with a particular emphasis on utilizing grasses. Mette Buw Lorensen from Byblomst delved into collaborative landscape design approaches between growers and designers. Katrine Turner from Vilskab explored tactics for enriching biodiversity in new urban plantings. The event drew to a close with a preview of next year's conference, slated to take place in England.

DEMARK: PART TWO

Although the conference had concluded, my journey continued as I transitioned to my final destination in Sorø, Denmark, where I stayed with Bent and his wife. During this time, we embarked on exciting explorations, starting with the old flower district of Copenhagen. The district had undergone a remarkable transformation into a bustling urban area, yet it retained its environmentally friendly design, fostering biodiversity alongside human activity (**Fig. 16**).

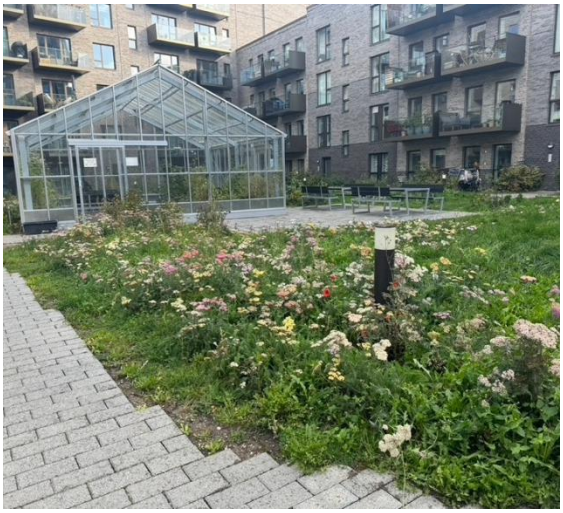

Figure 16. Copenhagen urbanized flower district.

Our adventures also led us to the old Carlsberg brewery and gardens, renowned for their impressive architecture and rich history. Delving into urban planting concepts was a highlight, as we observed firsthand the effectiveness of various strategies (**Fig. 17**). The visit to Poul Petersen's nursery was equally captivating, offering a glimpse into the diverse array of grasses he cultivates (**Fig. 18**). On Saturday, I had the unique opportunity to immerse myself in the life of Anja, a team leader at Gunnar Christensens Planteskole, who was close to my age. From accompanying her to the mall and supermarket to cooking dinner together, I gained valuable insights into a life of someone my age in Denmark.

However, the pinnacle of my experience, that took place on my last day in Denmark, was undoubtedly stepping into the shoes of a team leader at Gunnar Christensens Planteskole for a day (**Fig. 19**). It was an unforgettable experience that left me feeling deeply honored. The organization's excellence in plant production and management was matched by their remarkable leadership and communication skills,

creating a positive work environment admired by all employees. Collaborating with the team members not only brought me contentment but also instilled a sense of pride in their work and the company they represented. Inspired by this experience, I aspire to one day provide a similar enriching environment as a nursery owner.

Figure 17. Effectiveness of various urban planting concepts.

Figure 18. Poul Petersen's nursery demonstration garden**.**

Figure 19. Gunnar Christensens Planteskole. From left to right (Bent, Teagan, Anja).

CLOSING REMARKS

I am overwhelmed with gratitude for the incredible opportunity I had to embark on this journey. Every aspect of it filled me with wonder and optimism for the future. I witnessed breathtaking sights, encountered remarkable individuals, delved into horticultural practices, and forged memories that will forever hold a special place in my heart. This experience was truly invaluable, a once-in-a-lifetime gift provided to me by IPPS.

I express my gratitude to the IPPS-SRNA board for choosing me as a Vivian Munday winner in both 2021 and 2022. Additionally, I appreciate their decision to select me as the Early-Career Professional International Exchange Program awardee for the 2023 IPPS European Region Conference. Special thanks go to my European hosts Louise, Bent, and Anja, whose incredible hospitality made my visit immensely enjoyable and welcoming.