

## 2007 Young Propagator Study Tour of the U.S.A.®

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### INTRODUCTION

This project was facilitated by Horticulture Australia Limited (HAL) in partnership with the nursery industry. It was funded by voluntary contributions from industry. The Australian Government provides matched funding for all HAL R&D activities. Swinburne University also provided me with funding, all of which was greatly appreciated.

True to the IPPS motto “Seek and Share,” I am one of six young propagators given the opportunity to join the young propagators tour of the U.S.A. This was a 3-week tour of the United States visiting nurseries, university research stations, and significant gardens in North Carolina, Tennessee, and California. It also included attendance at the IPPS Southern Region conference. The tour allowed us to visit a range of amazing places and meet some true international industry leaders. We have all come back inspired and keen to share what we have learned with our peers.

I am involved in Horticultural Education in Melbourne, and consequently my perspective and observations differ to that of the other participants on the tour. My area of study focuses on how the nursery industry in America works in collaboration with universities to ensure the development of work-ready graduates from their horticultural programs.

### NORTH CAROLINA STATE UNIVERSITY

The first notable program we visited was the North Carolina (N.C.) State University Mountain Horticultural Crops Research & Extension Center. This is an organisation primarily set up to support the agricultural and ornamental production horticultural industries in North Carolina. They aim to have a three-fold benefit to the industry. Firstly — they are breeding for improved plant performance to support nursery production and sales. Secondly — they are providing training for M.S. and Ph.D. students, resulting in employment and growth in horticultural research. Finally — they have an extension program, similar to our Industry Development Officers (IDO) but with a strong academic focus, the extension officers deliver the results of the scientific research and support the industry.

The North Carolina State government recently conducted an impact statement and discovered that the horticultural industry in North Carolina is worth 8.6 million dollars and created 140,000 jobs. This information helps to justify the existence of programs of this nature. The North Carolina Department of Agriculture & Consumer Services (NCDA&CS) Research Stations Division operates through partnership and cooperative efforts of the NCDA&CS, North Carolina State University,

and the United States Department of Agriculture. The facility we visited is staffed and run by North Carolina State University, and generates revenue through plant breeders rights.

**Native Hemlock Devastation.** While touring the Smoky Mountains we saw first hand the devastation of the native hemlock which is being attacked by a newly arrived insect from Japan. The hemlock woolly adelgid (*Adelges tsugae*) is an aphid-like insect; it is currently spreading from the north-eastern to the south-eastern United States. This insect threatens entire populations of the species. The hemlock is an important part of the local flora and also has high commercial value; it is commonly used as a landscape plant. Scientist at the research centre are growing Asiatic species of hemlock and assessing them to determine resistance. If they find resistant plants, they will try to breed this trait into the native species, hoping for obvious benefits to the industry.

**Breeding Programs.** Other work that could benefit the industry is the breeding program looking to select specific characteristics for commercial use; hardiness, flower, fragrance, and disease resistance are some of the main areas. Traditionally they have been restricted in their selection of taxa that can be bred due to infertility caused by triploid genome; scientists have taken a technique used in cancer research using a piece of equipment called flow cytometer. The flow cytometer is used to count the number of chromosomes in a plant. This enables them to quickly determine potential breeding compatibility. They then utilise a technique to induce a diploid genome. This process allows desirable genetics to be used for breeding, vastly increasing the breeding possibilities available.

Probably most interesting is the work they are doing selecting and breeding *Miscanthus*. This plant has substantial weed potential, but also has many potential benefits. It can be used for bio-fuel production and is five times more efficient than corn, being currently used. It has a symbiotic relationship with a nitrogen fixing fungus, reducing fertiliser required. Understandably there is a desire to breed a sterile form to pre-empt any government moves to ban the plant or have it declared a noxious weed. With this project they are trying to induce a triploid genome.

All of these projects have the potential to generate income for the university. If successful they could benefit the industry and in doing so build and maintain strong links between academia and industry. This link with industry seems essential to N.C. State University's ability to developing competent work-ready horticultural graduates.

In Australia this link between research institutes and industry can be limited. Industry tends to foster a negative attitude towards academia and few academics have a strong voice in industry. I find this somewhat perplexing. My observations of Australia's nursery industry are that it is generally cutting edge and extremely open to change and advancement. The value of the next generation of industry leaders is openly discussed, but qualifications never enter the dialogue. It begs the question. Does the industry in Australia value horticultural education? Seeing the system in U.S.A., and the importance placed on training and the like between industry and academia, has given me a new perspective.

Through discussion with academics, industry leaders, and horticultural students in each state, I became aware of the importance to industry of the internships that students complete. This practice encourages collaboration between the industry, universities, and community colleges. The practice of students completing an internship with an employer before they graduate, allows students to gain first-hand industry experience before they graduate. After speaking with a number of people, it became apparent that this practice enabled students to consolidate the formal studies and develop some practical employability skills. There was a general perception that graduates have a well developed range of industry-relevant skills.

On the IPPS International pre-conference tour I had the opportunity to speak with Fred Garrett, a retired lecturer with Sandhills Horticultural Gardens Community College. Through his career he has found that most of his students who completed an internship were offered a job at the end of the allotted time. Sandhills has a long history of interaction with industry and Fred spoke of having employers ringing up to a year in advance to organise internships. Most students would complete a number of internships throughout the course of their studies and mostly have a range of employers to choose from. We met some of Fred's former students while on the pre-conference tour; B.B. Barns Nursery is owned by one of his former students, they spoke very highly of the program and judging from the positions that they hold, have done very well for themselves after graduation.

We also spent an evening with a group of students and David Hannings of California Polytechnic State University, these students had all completed an internship and were intending to go to a different employer during their summer holidays, they all expected to be paid for the work they did, but at a reduced rate.

I believe the process of sending horticultural students into industry while they are completing their studies could be adopted by Australian horticultural colleges. It would have its greatest application for the Certificate IV and above, as apprentice programs already incorporate industry training. With support of industry, students could gain first-hand experience at a range of locations across the industry and potentially result in much more work-ready graduates. If graduates can find some level of success within the early stages of their careers they will be much more likely to stay committed to the horticultural industry long term, and hopefully advocate the value of horticultural education to the industry.

### **VISIT TO THE NORTH CAROLINA STATE UNIVERSITY ARBORETUM**

On the tour we were taken to visit the North Carolina State University Arboretum. It is a beautiful garden with a strong education focus. The arboretum offers certificate training and also education to school groups on a regular basis. They deliver a master gardener course, which offers passionate gardeners the opportunity to gain formal recognition for their skills in exchange for volunteering their time to work in the arboretum's gardens. This qualification is offered at a number of venues across the U.S.A. and seems to hold some status within the community. It allows the industry and training bodies to harness a resource often forgotten by the industry. It definitely makes sense to offer recognised courses tailored to the needs of the hobby gardener, rather than have to subject them to the rigors of accredited industry courses with government funded places. This is especially relevant with the current situation in Victoria where amenity horticultural training is generally considered a low priority.

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The U.S.A. clearly values the link between the training providers and industry. Industry in America has a strong culture of nurturing graduates and takes responsibility for their development. Australia definitely has some programs in place to nurture young graduates, but from my experience in Victoria, there is definitely room for improvement. More could be done to attract and keep quality people in the horticultural industry — both from the government’s allocation of funding and priorities, to amenity horticulture, and stronger support from private enterprise. There is a substantially different link between industry and academia in the United States of America. Improved involvement between industry and academia would undoubtedly result in stronger employment outcomes and rewarding, ongoing careers for our horticultural graduates.