The Success of Growing in Sand with Peter Korn

Figure 1 Trowel in one of the many sand propagation beds

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Louie de Witt

Photos taken by the author and Harry Thomas

Table of Contents

Introduction:

My first introduction to planting in sand and high biodiversity plantings was at a Kew Mutual Improvement Society(KMIS) talk by John Little in February 2022, “Kicking the Habit: Designing without topsoil”. I then had the good fortune to visit Johns site near Basildon in June of 2022, a day organised by The Royal Parks. John had just started trialling growing in raised sand beds, about 4 ft deep. A month or so on I was shocked to see the depth and vast number of roots on a plant he pulled out of one of the sand beds on a video he shared. It really plucked my interest with different growing media and actually which kind of plants would benefit from this kind of growing. John had mentioned Peter Korn a number of times in the lecture and when I visited his place, making it clear Peter was at the forefront of this kind of growing, with a number of amazing projects going on. I seized the opportunity to become chair of KMIS when I started my Diploma, Peter was at the top of my list of speakers to give a talk for the benefit of everyone, thankfully he said yes and drew one of our biggest crowds! His talk was “High Diversity Plantings” and we saw some of the most incredible mixes of colour, real sustainability and some of the stunning projects Peter and his team have done in Sweden, his approach to low maintenance, affordable and highly diverse landscapes was something completely new and challenging the norm, yet everything he said he completely backed even when questioned by some in the audience. Growing in sand, a low nutrient growing media is what you least expect when you see the stunning array of colours Peter shared with us at the talk. It totally goes against the grain of traditional planting for most gardens and landscapes in the UK.

I said to Peter after the talk that I’d love to get some firsthand experience, he contacted me a few days later saying another Kew student, Harry Thomas, had also reached out to him and he’d be delighted for us to come. Since there is no better way of learning how to grow new things in new media than by experience with a leading pioneer in the field, this trip was planned. The aim was to see first hand the range of plants Peter grows at his garden in Klinta Trädgård around 50 km Northeast of Malmö, how he grows, what success they’ve had with this, and any challenges and limitations he’s faced with growing in this media. I would also like to unearth a bit more of the technical side of how he grows, substrate details, depth of planting, propagation of sand grown plants, transportation details and his seed mixes.

Week one:

Harry and I embarked from London on Sunday, arriving to a pleasantly warm and sunny Copenhagen. We drove from Copenhagen to Klinta, where we were met by Julia, Peters partner, who also has extensive knowledge and experience in horticulture and landscape design. We were also delighted to meet their dog Pixel – a real bundle of joy! Julia let us explore the 15,000 m² site freely until Peter arrived back from The Beth Chatto Symposium a little later. The site is split into two major soil types sandy soil and sandy clay soil, as the site is placed on where the lake which is close used to be, so a former beach!

Figure 3 admiring a *Helianthus salocifolius*

Figure 2 Harry and Pixel

However, the garden itself is split into 3 main parts – Julia's part, which is more clay based and shadier slightly protected from the wind. Peter's part, which is sandy sunny and windy – the site itself is at the end of a range of wind turbines so you can imagine it can get seriously windy at times, overall, a very exposed site. The third part is the collaborative which is in between the two, also containing the greenhouse. The other part of the site is for the kitchen garden and nursery. Within the nursery there around 150 propagation beds which are slowly being reduced to make way for more experimental habitats, partial because there are too many to keep clean with all the other work is going on. I noted the amount of insect life around the site was impressive!

Figure 4 looking out of the gardens towards the wind turbines

It was great to see Peter again, especially excited as he had had such a great time at Chatto. Harry and I were very excited when Peter told us his plan for us. Essentially a whole project from start to finish, travelling across the country to plant up in Stockholm on a new housing development. We travelled to his guest barn that night very excited for what lay ahead. We met Maja there a student from Sweden also doing work experience with Peter, she had already been there a number of weeks and loved it. The guest barn is also set on a unique site which Peter has very big plans for.

Figure 5 Dinner at the guest barn with Maja

Figure 6 looking back toward the house across the nursery

During the first week we were shown around the site in more detail, met Jonathan and Emelie who make up the rest of the team at Clinton. At the start of the week we set out a rough plan of what plants we were going to be propagating for the following week's project, it was a very collaborative effort with a small but highly dynamic and enthusiastic team. It was a laid back but focused atmosphere. Peter is also very into his insects and so a few mornings he waited to open his moth trap with us, which was a real delight for me as I share this interest.

Figure 7 Moths galore!

When Peter took us around on the tour it was clear his plant knowledge was vast, not only knowing so many names of fully grown plants but also miniscule plants, how they like to grow and where they grow best, which was a real testament to how he has designed very aspects of his garden. A real emphasis was given to steppe plants angled towards the Southwest to increase wind, and how varying topography can help massively increase diversity in plant and insect biodiversity by creating more niches. Very much stressing how all these plants are grown with no compost or extra watering – some literally get baked as we found out later in the week when we worked on the hottest September day on record getting up to 30 degrees. Peter attributes all these factors and more to the success of his plantings, which was evident. He suggested that these factors help the plants grow thicker waxy cuticles which help slow transpiration and that they also produce smaller cells as they grow slower making these plants much hardier and less likely for the cells to burst when plunged into freezing temperatures. Peter is indeed a great teacher as this could have been a much more complex, but laying out the basic principles, it really becomes obvious that this solution works incredibly well. We also spoke at length about the symbiosis created with mycorrhizal fungi, and that he's very interested in getting people to come and examine his site.

Figure 9 Raised circular habitats

Figure 8 Harry in amongst the foliage

The design of the site, is very clever and Peter and Julia are have a long list of ideas that are coming to life! Its amazing to see what they've thought of so far and to hear about imminent future plans on this! Peter also spoke at length of having more traditional within the site along with the veg garden, and under the trees driplines being places that can eat up the compost produced and any leaf litter which will breakdown, keeping the other beds free from as much decaying organic matter as possible. They use the same principles when designing parks to create minimal maintenance. Essentially creating a mountain down to sea level ecosystem condensed down into park size, by removing as much dead material as possible in February and removing it or moving it to these more traditional beds/places that will like organic matter, and also having topography and soil types to replicate all the niches in between.

A great example of using topography to create niche is where his raised circle rocky beds where it was evident of plant changes from the South facing to the north facing side. Peter has also created ponds which has allowed him to have marginal plants such as *Limoniums*. He also has a few feet of tiered terraces going down to this plant pond with clay underneath a large layer of sand but on top is very exposed which is much better for Mediterranean plants. One thing that he found amusing, and as did we was the often some of the more rare plants he had did very well on the paths and so we're left to be appreciated and also as a temporary propagation bed. Peter is also a very hard grafter, he took two two weeks holiday to fill in a big pond and create this spiralling terrace down to a well, highlighting plants on either side filling niches, cracks in the walls, partially flooded as the water table rises significantly and submerges a load of plants at certain times of the year, but also being a sun trap. He created it by hand moving large stones about spending almost 12 hour days doing it, a feat of what he is capable of with his determination and vision, plus the amazing array of plants within.

Figure 11 The Spiral terrace

Figure 10 The path A.K.A. the temporary nursery

During this first week, some of the plants we lifted and divided from the nursery included:

- *Aeonium sp.*
- *Anthemis sp.*
- *Anemone sp.*
- *Arctanthemum arcticum*
- *Artemisia sp.*
- *Aqualiga sp.*
- *Aster* 'Twilight'
- *Centaurea nigra*
- *Chrysanthemum* 'Mary Stoker'
- *Dianthus sp.*
- *Echium vulgare*

Figure 12 Harry stood in front of a "weed" bed, full of mostly useful plants that added to the diversity of planting on the project

• *Euphorbia cyparissias* 'Fens Ruby'
• *Geranium cantabrigiense*
• *Geranium sanguineum*
• *Geranium sp.*
• *Hypericum sp.*
• *Iris sibirica*
• *Linaria sp.*
• *Miscanthus sp.*
• *Nepeta gigantea*
• *Salvia spp.*
• *Seline sp.*
• *Solidago cutleri*
• *Veronica teucrioides*
• And many more

Figure 13 above "weed" bed cleared in a hort space of time

Harry and I both got a challenging species to dig out each, Harry a *Paeonia* and myself a *Baptisia*. Theses were both indeed incredibly difficult to dig out, both with huge stonking great root systems. I should mention here that the nursery beds are all the same around 20cm deep with mypex underneath to act as a root barrier, although in the case of these two plants they didn't quite work as well as intended, with the roots growing through the mypex! In order to keep these beds going as long as possible we needed to remove all of the plant roots, to keep organic matter to a minimum – this was in part to keep the plants as robust as possible but also growing in this way, helped reduce the amount of pest and disease, which was also evident considering it was September, there was little to no sign of mildews on the lower leaves or any sign there had been aphid damage - a success of growing in low nutrient sand. The roots came out so easily and were ample in density.

Figure 14 Myself digging out a *Perovskia*, much more robust and not floppy like the ones we grow in more traditional beds at Kew!

The footprint of the nursery beds was important too, just wide enough you could pull everything out from both sides to make sure you didn't step in the bed compacting the sand and potentially making it harder for the roots to go down further, and making sure the path levels were lower than the beds, as when a bed had become exhausted (too much organic matter build up) they would simply dig out the bed onto the paths, simple yet genius! I noted although the sand was quite dry and warm on the surface a little further down it became moist and cool – optimum for happy roots, whilst being optimum to supress fungal diseases on the plants above ground with no rich decomposing material to create a moist atmosphere below the plants. A few of the weeds, mostly on the paths were equisetum, and couch grass, thankfully as they were also in sand they could be pulled out very easily, pulling out more than a foot at a time. The equisetum had a separate pile to the rest of the compost as these were quite an annoying weed.

All the plants we dug up were put in old plastic bags and placed under a wet towel in the shade before we took them into the cold garage. I've never really had the opportunity to work with the underground roots of plants in this format where all you have is the roots – it really adds an extra dimension on to knowing your plants on a more intimate level. This was demonstrated later in the week when Harry and I could recognise some of the plants we had dug up just from the roots we were dividing. It was a pretty surreal experience and the differences in roots were often quite distinguished, although some were more subtle – it certainly is amazing to think about the diversity of plant looks below ground too! The division of plants varied drastically too from the very quick and easy to the near impossible with out the use of knifes of some of the large grasses like *Miscanthus* and two people! Over the course of the week, we propagated over 1500 plants in total. Separating them into individual old bags with a label in, with a quick squirt of water to keep the roots hydrated until planting out the following week, it put a smile on my face as I watched Peter water some 500+ plants outside in these old bags in less then 30 seconds, however if too wet they will turn into compost. He also explained some of the roots still put on a lot of growth within the cool dark room they are stored in before the planting project! Inside the propagation room we worked with great speed to even better music choices from all in the background as we spoke and joked throughout the later half of the week. Peter, Emelie and Jonathan all teaching us about how each different species needed to be propagated and how small or big each section of the propagated roots needed to be, as well as cleaning all the dead roots and sand off of them. Peter showed us how small you could really take it with some splitting the root into 1cm sections and splitting these into 4 along the cross section to make 4 plants per cm of root – I was in amazement!

Figure 17 Peter teaching us various propagation techniques

Figure 15 Peter water a few hundred plants in less than 30 seconds

Figure 16 plants waiting to be propagated

Figure 18 one of the harder to divide set of roots

Throughout the week there were two group tours and some visits from people Peter was working with on various projects, it really highlighted how vast his knowledge is and how willing he is to share it! One tour group was literally walking around with their jaws dropped after he explained how he grows in such a different way to how some of these people have been growing their whole lives. Before the tours visited the whole team did a blitz tidy of the garden – focusing no more than 5 minutes on each section, removing as much obvious dead or weeds from the bed and paths, of which there was few, whizzing round the whole garden in less than an hour. Peter showed us how removing the dead leaves from some of the *Iris* helped expose them to more sun and really helped bake the ground around them, explaining that this really helped produce the robust form we saw before us and that this also helped with producing better longer lasting flowers. Leaving that evening I will never forget seeing Peter flying round the small lawn with the mower, he really doesn't stop – it was an inspiration to watch!

Figure 19 Harry and Peter blitzing the *Iris*

Part of the project in Stockholm involved some tree planting, Peter gets a mix of trees, unfortunately no nurseries produce bareroot stock, so he gets in small trees, some of interesting cultivars like some Russian varieties of apple which are much hardier. He then keeps these trees on the edge of life until the project they are needed for. At this point they are left to dry as much as possible to help shaking out and picking off as much of the soil and organic content as physically possible without wasting too much time. This was a great group activity, thankfully as it was a difficult task indeed. The initial shake down wasn't too bad but getting some of it out was much harder, and you could see some of the different substrates used throughout the potting stages – which was key to remove as it was very moisture retentive, we washed the roots a few times too to help loosen some of it. Then we potted them up in crushed pumice and gave it a good soaking, so they were ready to be transported up to the site first thing next week.

Figure 20 trees without pots, in potting media

Figure 21 Maja and I, starting to prise off the media

Figure 23 getting through the first lot was a lot easier than this central bit!

Figure 22 Harry washing the roots

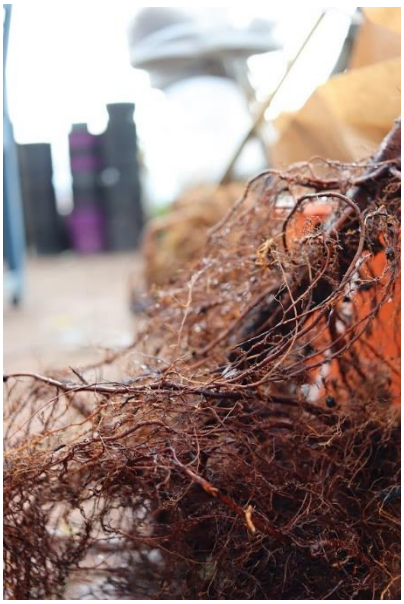

Figure 26 a lovely clean set of roots - you wouldn't quite believe the work that went into that!

Figure 25 Jonathan watering in the newly potted in pumice plant

Figure 24 placed in the shade eagerly awaiting there new permanent home

This first week was a lot of hard graft in prep for the planting, but Peter found time one evening to take us to see one of his recent projects in a nearby town which he was quite proud of – myself, Harry and Maja were blown away by the size of it. Then I questioned how much it cost/he charged Harry and I could not believe it – something that size in London would easily be 5-10x the cost (and be much more boring). Peter had really thought about the essence of this site how kids will play, and how it will evolve over time – a truly successional planting! Going from the current meadows, on hills and small trees down to and over large logs over a stream, and how it would turn into a hazel forest in the next few years and longer term give way to the oak trees planted. A brilliant mind, curating something that would be much harder to see on plans of a document. Peter talked about how he imagined being the size of a child and going under some of these large plants would be an aww inspiring moment, I couldn't agree more. He'd also cheekily planted some fruit trees across from his site extending the reach of his work brilliantly. We then compared this to some of the plantings of a different contractor on the same site using more traditional methods – it was a stark comparison, looking lifeless and struggling – Peter believes in a much more naturalistic aesthetic one that should be able to be enjoyed by everyone and be able to be immersed into by everyone, not roped off or fenced off. It was interesting to see how when suppliers bring in larger trees,

grown in optimal conditions they start to struggle and don't look healthy, I think I recall Peter saying they had already had to replace some of these trees, which he was frustrated at as his were all fine and able to adapt much more readily. He was also thinking about bits that needed to be added or plant mixes that could be brought in, highlighting his passion for this work and the fact that a garden (or landscape) is always evolving.

Figure 28 Peter, Maja and I walking through one of Peter's nearby projects

*Figure 29*Harry, Maja and Peter overlooking this project

Figure 27 seeing some of the water features in this project

Figure 30 a great sign explaining the long term view of the landscape from meadow to forest

We finished the week on another superb September day, and we got to have a brilliant break as a surprise by Peter, of bubbles and a long moment to absorb the spirit of the place and a chance for Peter to thank everyone for the hard work this week especially Maja as it was her last day at Klinta before returning to her course near Stockholm.

Figure 32 a well-deserved break and cheers, L-R Peter's son, Peter, Pixel the dog, Jonathan, Harry, Myself, Maja and Emelie

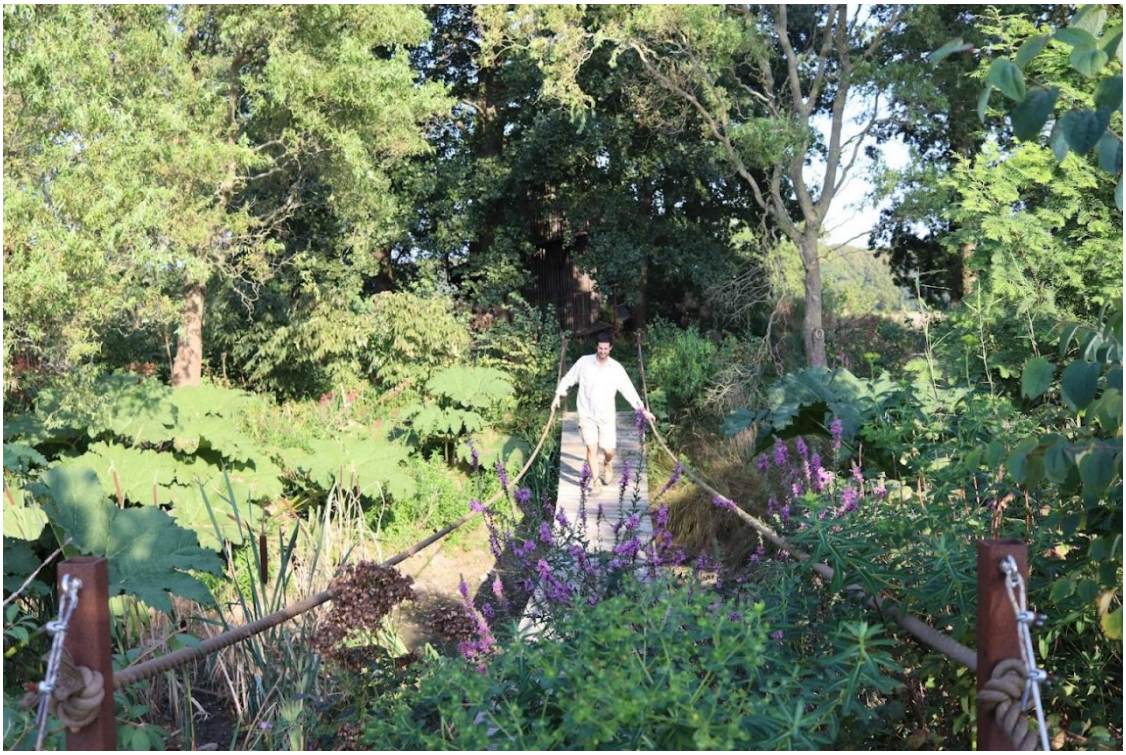

Figure 31 I also had some fun on one of Peter's other projects, the rope bridge!

End of the week and a goodbye to Maja, Peter still did a little work over the weekend to be sure we had enough to take come the following week! What a blast! Harry and I eagerly anticipated our road trip the following week.

Figure 33 myself, Maja and Harry on our last eve at the barn together

Figure 34 a preview of what Peter has in store for his guest barn site, it's going to be brilliant

Week 2:

Car packed in his signature way, some where north of 1500 plants, plus tools and over 60 bags of different seed for this planting job, all in the back of a VW Sharon, brilliant! We stopped at a few sites on the way up so Peter could show us some different types of projects he's done. He also took the opportunity to take stock of plants doing well and where more plants could be put in next time he is on his way up to Stockholm, he really does care about his projects and is in touch with a lot of the people doing the plantings. He also took us to a recent Piet Oudolf planting to show us a different style, and left us to make our own minds up comparing it to what we had seen in the previous week… It's infectious to see how passionate both Peter and Emelie were about these other projects and that their minds were both active the whole time. I was impressed at the variety of sites and the different substrates used. Peter highlighted that it's always good to find where waste aggregate is stored in cities as this can be used in a sustainable substrate mix, highlighting that they can be made out of different things often with biochar mixed in, generally a mix of 0-8mm diameter substrate is used in the right proportions. Often he will get samples made and be able to tell which is best, sometimes changing throughout the site depending on availability, but always these are low nutrient plantings.

Figure 36 can you imagine how many lorries this might be if in pots?

Figure 35 Piet Oudolf landscape, stop 1

Figure 40 stop 2, Ikea distribution centre, a project that will be planted up soon

Figure 37 stop 2, top layer and under layer of substrate

Figure 39 stop 3, a hospital garden for patients to come and absorb some calmness

Figure 38 stop 3, Peter getting a photo of another bed he was pleased with on the hospital site

Figure 42 stop 4, Peter collecting seed

Figure 43 stop 4, Emelie and Peter stopping to appreciate how the landscape has matured

Figure 41 stop 4, abundance of vegetation

We arrived in Stockholm after around 600km of travel with some brilliant stops along the way to marvel at some of the high diversity plantings. We had a quick dinner and with some light still to spare we popped over to the site to finish raking out the piles of substrate the other contractors hadn't had time to do. A nice way to stretch out after being in the car for most of the day! In this mix of substrate, a blend of local recycled aggregates and biochar was used. And it was a joy to work with dirty but not muddy hands!

Figure 45 Emelie and Harry raking the site

Figure 44 Harry raking

We started on the planting day by unloading the car full of plants onto the floor and roughly sorting them. Peter chooses a lot of grasses to plant out as these show people that something is happening. As we were planting into this non-traditional substrate, Peter showed us how to do this with grasses, actually going deeper then you normally would, as the new buds underground for the grass and other plants will remain protected but not too wet so won't rot off but are also protected from any above ground damage! like in the nursery beds where the top inch or two was much drier. He showed us the technique used with his spades to open up the ground and slot the roots down in behind the back of the spade. After a little while we got into the swing of it and as Peter ran about placing plants we were all busy planting, later in the day Peter let us place some of the plants out which was a great experience. It was also great to see how much some roots had grown over less than a week! I enjoyed Peter giving better plants to match some of the people's outside spaces that they had some plants in, saying that they were more likely to look after them and add to it.

Figure 47 Peter and Harry looking at the bags of plants we bought up to Stockholm

Figure 46 Peter standing over the first grass in the ground

Figure 49 me planting

Figure 48 a semi finished landscape starting to take shape, hidden below the surface many plantings waiting for next spring

Figure 51 Peter walking about placing plants

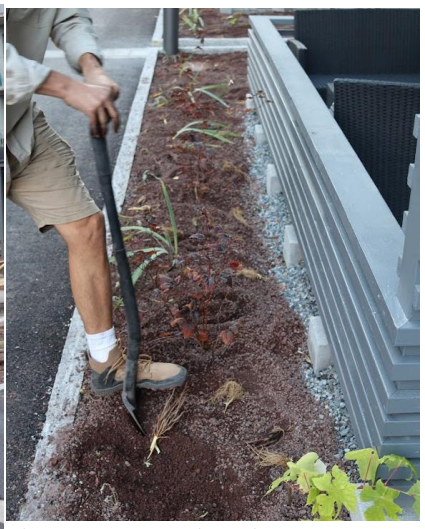

Figure 50 me planting, circles were drawn where we had put plants that didn't show above ground

We finished the plantings after two very long and wet days, finishing with a seed mix made by Peter on site with a bit of different plants in each – a highly diverse set of plants! It was great to see Peter have no plans, rather get a feel for the site at ground level to understand the way the wind moves through depths of substrates, aspects of beds, and the amount of sun/shade they get, along with seeing where people's windows are, the BBQ area and how that will feel. Really getting an understanding of how the site will be used by everyone, some of the people even came out to talk with him, very excited to see plants going in the ground! By the end of the two days, you could see it taking shape – however it will be a real treat to see what it looks like next year as all the seeds germinate and all the cut back plants that are underground pop through, it will be completely transformed! It's a shame the sun wasn't out, and it chucked it down on the sowing of seed, but at least it helped the seed stick to the ground!

After drying off a bit we went for a late lunch and to a final site of an older project to spread more seed. Just showing how much thought and ongoing thought goes into his projects.

Figure 53 Peter mixing seed

Figure 52 Peter, Emelie and Harry standing in the wet of the finished planting

Figure 54 Harry and I drenched and very happy with what we'd achieved and learnt the last 2 weeks

Reflection and conclusion:

On the long trip back to Copenhagen from Stockholm Harry and I chatted a lot about the experience, quite frankly we were both overwhelmed with the amount we'd learned and the generosity of the whole team. It really turns traditional UK practices on their head… In and ever increasingly unstable climate we saw and learned how Peters projects were fairing, significantly better than others I have seen. To me it's an incredibly sustainable and smart way to plant, especially in urban environments – low maintenance,

and roaring with colour and life. The plants themselves more resilient to drought and looking superb, with longer flowerings, and due to the substrate also resilient to heavy down pours! I got the opportunity to practice recognising plants from their roots, something I think many have never done, propagating easily and by the thousands in a week was brilliant! It really goes to show the work of a great plants man, something I would like to aspire to one day. I will be taking this newfound knowledge into everything I can. As Peter said a lot of traditional plantings are just an evolution of kitchen gardens or vegetable growing – great for growing lots of juicy fruit and veg, but when it comes to most other plants that's not what they need. Giving a plant what it needs in terms of habitat niches, soil preferences, it will pay you back in form colour and health. I'm still questioning a lot of things I have done and others too and will continue to do so to spread Peter's ethos and workings to get it where it rightfully belongs. I really believe this is the future of sustainable planting. The world needs more people like Peter, who understand where these plants we have come from and how they grow, from small alpines to oak trees I've been more than impressed. I guess high diversity plantings do not need to cost much, financially or environmentally!

Acknowledgements:

I would like to thank The Merlin Trust for making this trip entirely possible and for the encouragement for the application and financial contribution towards this trip. This trip has allowed me to expand my horticultural knowledge greatly in a short space of time.

Peter Korn, thank you for being not only a madly passionate plantsman but also a fantastic teacher, pioneer in the field, and a very caring individual, Harry and I are very grateful for all the knowledge you shared with us. Not only that but it was brilliant to see your quick adaptability in your work week, being so laid back and flexible, but managing to fit everything and more in was incredibly impressive!

To the rest of the team, Julia, Emelie and Jonathan and fellow student Maja – thank you all for being so welcoming, kind-hearted and sharing all of your knowledge, people really help to make a place so special. It was a joy to share in the camaraderie and great to learn some Swedish, Harry and I have bought 'hej hej' back with us and it's slowly spreading around Kew! Also, thanks to Pixel for being the best looking pup!

Lastly, thanks to my fellow Kew diploma student, Harry Thomas, for making it a trip to remember and one I will always be referring back to, a definite milestone in my horticultural career for sure. You were the best company and it was great to explore some of Sweden with you, I hope for more trips in the future!