

THE DEVELOPMENT OF THE ROYAL BOTANIC GARDEN EDINBURGH 'CERTIFICATE IN PRACTICAL HORTICULTURE'

Leigh Morris¹ & Laura Cohen²

ABSTRACT

The Royal Botanic Garden Edinburgh (RBGE) has a long history of delivering high-quality practical horticultural training within the UK and abroad. In 2007 this training was formalised by the RBGE Education Department into the 'RBGE Certificate in Practical Horticulture' (CPH) programme. The vision for the CPH was to create an internationally recognised and standardised, yet flexible and practical horticultural qualification, predominantly, but not exclusively, for the botanic gardens sector. Providing a measurable educational outcome for international development projects is increasing the contribution that RBGE makes to target 15 of the Global Strategy for Plant Conservation. This paper reviews the development of the CPH programme, through its initial conception, the writing of the first course syllabus, the evolution of the course structure and content, up to the course now being offered today. The initial success of the CPH is discussed, detailing the different locations in which the course has been delivered to date and the other gardens that are now offering the CPH themselves. Recent developments are discussed, including the endorsement of the course by Botanic Gardens Conservation International (BGCI) and the funding awarded by the Stanley Smith (UK) Horticultural Trust in 2010 for course development. The paper ends by highlighting the future objectives for the CPH, including the development of new and improved tutor and learner support materials, the offering of 'train the trainer' programmes that will facilitate the wider uptake of these courses and the vision for the programme to become a benchmark for practical horticultural training worldwide.

INTRODUCTION

RBGE has delivered practical horticultural training for many years in a variety of contexts and locations. For over 100 years their own full-time horticulture Diploma students have received practical training in the form of timetabled classes and practical work experience within the garden. Adult learners attend a range of more informal practical one-day workshops held in Edinburgh, in topics ranging from 'Grow Your Own Vegetables' to 'Orchid Cultivation'.

A fundamentally important part of the practical horticultural training delivered by RBGE has been raising the level of horticultural skills within developing botanical gardens overseas. RBGE horticulturists have been responsible for the delivery of practical horticultural training and building capacity within gardens in countries ranging from Bhutan to Turkey. Not only have RBGE horticulturists passed on their skills and

1. Leigh Morris is Head of Education at the Royal Botanic Garden Edinburgh.

Address: 20A Inverleith Row, EH3 5LR.

Email: l.morris@rbge.org.uk

2. Laura Cohen is the Certificate in Practical Horticulture Coordinator at the Royal Botanic Garden Edinburgh.

Address: As above.

Email: l.cohen@rbge.org.uk

knowledge, but they themselves have gained a great deal from the training experiences that have improved the quality of the overall plant curation at RBGE's four gardens. This development work is extremely important and is a key part of RBGE's delivery on the Global Strategy for Plant Conservation (GSPC), particularly target 15: *the number of trained people working with appropriate facilities in plant conservation increased, according to national needs, to achieve the targets of this strategy.*

The standard of RBGE practical training is highly regarded and very well received within the global botanic garden community. In 2005, however, when RBGE restructured its educational activities and formed a new Education Department, it became evident that the practical training they delivered had no formal certification, there were no firm guidelines for delivery and staff often had to develop new bespoke programmes for each project they engaged with. Further, there was minimal link-up between the Education Department and the RBGE horticulturists who carried out much of the training delivery.

The decision was taken for RBGE to offer more structured practical training, but at the same time not lose the flexibility to be able to teach the skills that are required in each garden. An initial review of existing horticulture courses available in the UK was carried out to see if an existing qualification would fit the requirements. The findings confirmed that existing horticulture courses were generally theory-based with a relatively small practical element. It was considered whether National Vocational Qualifications (NVQs) or Scottish Vocational Qualifications (SVQs) should be offered at RBGE, but this was soon decided against as both qualifications focus too much on portfolio building and qualifications are gained by students collecting and collating pieces of paper rather than learning practical skills.

THE VISION FOR RBGE'S OWN COURSE

In early 2006 the ideas started to form for the creation of RBGE's own practical horticulture course. The broad aim was to create a standardised, yet flexible, qualification in practical horticulture that would allow trainees to acquire the key basic practical skills and at the same time attain an internationally recognised certificate. The course also needed to be flexible enough so that it could be tailored to suit any country or situation.

The idea for RBGE's own course really started to develop in December 2006 when Leigh Morris and Peter Brownless (RBGE's Nursery Supervisor) went to the Sultanate of Oman to deliver practical horticultural training to staff of the developing Oman Botanic Garden (Fig. 1). Peter had many years' experience of delivering high-quality nursery and horticultural training within a range of overseas development projects and so, working with Leigh who had an educational background in horticulture, an ideal opportunity to formalise aspects of RBGE's training in propagation, mixing media and potting presented itself. The shared view was that there had to be some element of theory teaching, but the emphasis had to be on practical skills. For each topic Peter and Leigh produced a short theory presentation, initially using a whiteboard but latterly using

PowerPoint to create a highly image-based presentation covering the key points with minimal text so it could be easily translated into Arabic. This presentation was followed by practical demonstrations and then by lots of hands-on practical work by the trainees. This model of training was successful, it was extremely well received by the Omani team and the lessons learned and ideas gained in Oman were most useful in the next development stages of the practical training course.



Fig. 1 RBGE Nursery Supervisor Peter Brownless, delivering propagation training at the initial nursery site of the OBG in December 2006. Photo: Leigh Morris.

As well as for use in capacity building projects overseas, the need for a more formal practical horticultural course to offer to learners in Edinburgh was recognised. It was decided that the demand for such a programme should be tested, so within the booklet produced by RBGE listing the formal education courses in June 2007 the RBGE Certificate in Practical Horticulture (CPH) was actively promoted for the first time (Fig. 2). Students were given the option to register for the CPH and then collect evidence that they had completed eight different RBGE one-day horticultural workshops. Once they had completed eight workshops they would gain the CPH – as a ‘certificate of practical training’. The one-day courses were booked out quickly for the year, and many people immediately signed up for at least eight of the days RBGE offered as part of the whole CPH programme. There were many queries highlighting the demand for the CPH, such as “I can’t do eight days this year, so can I complete over two years?” The enthusiasm for the CPH was immediately clear.



Fig. 2 Extract from the RBGE Education prospectus 2007 (left) when the CPH was first publicised. The sheet (right) that students working towards the CPH had to get signed after each one-day workshop.

OBJECTIVES OF THE CPH

The decision was taken by RBGE to develop the CPH further, and the next step was to define precisely what it was aiming to achieve. The broad objectives were to provide:

- an internationally recognised practical horticultural qualification, predominantly, but not exclusively, for the botanic gardens sector, thereby providing a measurable educational outcome – the RBGE Certificate in Practical Horticulture – for international RBGE horticultural development projects.
- a practical horticultural training programme that could be delivered, assessed and verified in a standardised way. It would be supported by teaching and assessment materials (such as teaching schemes, visual presentations and training manuals) containing minimal text, which could be adapted more easily for each country in which the course was being delivered.
- a qualification that could be delivered as a stand-alone course to adult education students at RBGE (and at other partner institutions), or an additional qualification for full-time students studying horticulture at RBGE.

STRUCTURE AND SYLLABUS

It was soon realised that if the CPH was to have any real credibility and longevity as a qualification, as well as the practical training there needed to be clear teaching and assessment guidelines in the form of a course syllabus, as well as formalised and

verifiable assessment of the skills taught. The ideas were beginning to form for the CPH, but it needed an external stimulus to combine those thoughts into the first course document.

Late in 2006 Professor Adil Güner, Director of the Nezahat Gökyiğit Botanik Bahçesi (NGBB) in Istanbul, visited RBGE and met with Leigh Morris to discuss the horticultural training of NGBB staff. They discussed the vision for the practical course RBGE was intending to create. Professor Güner believed such a course was "just what NGBB needed" so he invited Leigh to spend a week in Istanbul in February 2007 in order to write and develop the first formal CPH syllabus for them as part of the joint RBGE/NGBB Darwin Initiative Project. This first CPH syllabus pulled together all the initial ideas for the CPH and was broken down into a number of sections: course overview and objectives; structure and unit descriptors; delivery and assessment methods; and details of certification and verification.

The course was designed so that it could easily be adapted for use within a range of countries and botanic garden settings. The full CPH course would be delivered as a series of days spread over a period of time or as a two-week block course. The written elements of the course documentation and teaching materials had to be concise, so that translating them into different languages would be relatively straightforward. Some theory was required and the intention was to develop a highly visual PowerPoint presentation for each day of the course. These presentations would be created with minimal text (again to aid translation) and so that additional images could easily be added or swapped to highlight specific points and/or plant species of the country or garden in which the course was being delivered. In effect, the CPH provided a structure but was flexible enough to be delivered anywhere. The assessment had to be carried out using a predominantly practical approach, focused on a 'practical exam' at the end of the whole programme; however, it was also decided that students should keep a notebook during classes and this (plus copies of the presentations) would help them in their preparation for the practical exam at the end.

STRUCTURING THE COURSE

One of the most difficult aspects of writing the first CPH syllabus was deciding exactly what would be included and how it would be structured. The first structure (Table 1) was made up of ten units, six mandatory and four optional (students had to complete eight units to gain the CPH). For each unit there was then a one-page descriptor detailing learning objectives, key knowledge and practical activities to be covered during the unit and assessment guidelines. These unit descriptors were purposely kept brief, so that it would be easier for them to be translated into different languages.

Unit number	Unit title	Core or optional
CPH-1	Plant Nomenclature & Botanical Terminology	Core
CPH-2	Seed Propagation	Core
CPH-3	Vegetative Propagation	Core
CPH-4	Planting & Establishment	Core
CPH-5	Container Plant Cultivation	Core
CPH-6	Pruning & Training	Core
Optional units (students to complete at least two):		
CPH-7	Pest, Disease & Weed Control	Optional
CPH-8	Propagation by Grafting	Optional
CPH-9	Tree Surveying	Optional
CPH-10	Lawn Cultivation & Maintenance	Optional

Table 1 RBGE Certificate in Practical Horticulture (Version 1) Syllabus – February 2007.

The choice of the mandatory units in the first syllabus was quite straightforward, with topics such as propagation techniques, planting and pruning. However, the optional units required more thought and the initial ones were in fact one-day horticulture workshops already delivered at RBGE, the thought being that the first course would be created as much as possible from what was already offered. Following on from the first syllabus being written in February 2007, over the next few months various other people had

Unit number	Unit title	Core or optional
CPH-1	Plant Structure & Nomenclature	Core
CPH-2	Seed Propagation	Core
CPH-3	Vegetative Propagation	Core
CPH-4	Planting & Establishment	Core
CPH-5	Container Plant Cultivation	Core
CPH-6	Plant Care & Maintenance	Core
Optional units (students to complete at least two):		
CPH-7	Soils & Composting	Optional
CPH-8	Pest, Disease & Weed Control	Optional
CPH-9	Propagation by Grafting	Optional
CPH-10	Tree Surveying	Optional
CPH-11	Grass Cultivation & Maintenance	Optional

Table 2 RBGE Certificate in Practical Horticulture Structure (Version 1.5) – June 2008.

input, and the list of units in the CPH programme went through many small changes: 'Plant Nomenclature & Botanical Terminology' was renamed 'Plant Structure & Nomenclature'; 'Pruning & Training' was replaced by 'Plant Care & Maintenance'; and an optional unit was added on 'Soils & Composting'. The argument was then raised that "some gardens will not actually do any propagation", and so the two propagation units were made optional. This, however, was rejected as it was felt that any practical horticultural course must teach propagation skills. These slight changes resulted in the structure of the CPH then promoted in the June 2008 RBGE Education Prospectus (Table 2).

The Eden Project

John Ellison (Head of Formal Learning) and Mark Paterson (Tertiary Education Coordinator) from the Eden Project became interested in the CPH while visiting RBGE in 2007 and were keen to trial the programme at their site in Cornwall. They saw the CPH as an opportunity to involve their horticultural team in training the public, as well as generating income. To facilitate this, RBGE's Greg Kenicer and Leigh Morris went to Cornwall in March 2008 to assist in the delivery to adult learners of two days of the



Fig. 3 Leigh Morris (far left) and Greg Kenicer (far right) with the first cohort of CPH students at the Eden Project, Cornwall in March 2008. Eden's Tertiary Education Coordinator, Mark Paterson, is seated far left. Photo: Eden Project Horticulturist.

course (Fig. 3). These taster days were extremely successful, and the Eden Project then offered the full CPH in 2009 and again in 2010. Mark Paterson, the CPH coordinator at Eden, regards it as a huge success; there has been huge support from the Eden horticulture team, the courses are fully booked and they are planning to expand their delivery.

On Friday 4 July 2008 a joint Eden and RBGE CPH development day was held in Edinburgh the aim of which was “to review and revise the delivery and assessment of the RBGE Practical Certificate in Horticulture”. Most importantly, the key objective for the day was to review the course and create a new structure that contained only eight mandatory units. The logic behind this was that a course with no optional units is far easier to timetable and deliver. After much discussion and debate the new structure was decided (Table 3). It was deemed to contain all the fundamental topics that a practical horticulturist required, with the more specialist topics previously included – such as grafting and lawn care – having been removed. It was felt that such topics could still be delivered as separate one-day ‘advanced’ classes as required.

Unit number	Unit title
CPH-01	Understanding Plants
CPH-02	Soils & Growing Media
CPH-03	Seed Propagation
CPH-04	Vegetative Propagation
CPH-05	Planting & Potting
CPH-06	Plant Care
CPH-07	Plant Maintenance
CPH-08	Plant Health Problems

Table 3 RBGE Certificate in Practical Horticulture Structure (Version 2) developed in a joint meeting between RBGE and Eden Project staff at RBGE on 4 July 2008.

RBGE is delighted to be working in partnership with the Eden Project in both the delivery and development of the CPH, with the different qualities of the two institutions complementing each other extremely well. At the meeting on 4 July 2008 it was agreed that the two organisations would continue to build their partnership and look to jointly develop teaching materials for the course. The CPH has been jointly badged and promoted ever since, and the annual joint course development meetings continue.

Transition period

Following on from the meeting in July 2008 the CPH was offered in its new streamlined form. However, there was an issue as the old scheme was still being promoted, and there was a backlog of students who had signed up to do the old version, including various optional units, over two years. This resulted in quite a difficult transition period

of about 12 months during which RBGE had to organise some classes for relatively small numbers of students. The final practical exam was also more difficult to organise.

The structure of the CPH today

Some slight changes were made to the unit titles and content in the months following the meeting in July 2008, but by May 2009 a concrete list of unit titles had been developed that is still being used today (Table 4).

Unit number	Unit title
CPH-01	Understanding Plants
CPH-02	Soils & Composting
CPH-03	Seed Propagation
CPH-04	Vegetative Propagation
CPH-05	Growing Media & Potting
CPH-06	Planting & Establishment
CPH-07	Established Plant Maintenance
CPH-08	Plant Health Problems

Table 4 The present structure (Version 3) of the RBGE Certificate in Practical Horticulture.

DELIVERY OF THE CPH

Delivery in the UK

The CPH is presently delivered twice a year as Saturday classes spread over a number of weeks to adult learners at RBGE (Figs 4 & 5). Both courses are always fully booked with a long waiting list for a place on the programme. A group of horticulture staff from Edinburgh Zoo also had a bespoke CPH programme delivered to them. The CPH has a structured syllabus, detailed teaching schemes and a real focus on quality, but it does not have to conform to an external awarding body and therefore students are not required to produce reams of paper evidence to show they have acquired skills. The student feedback praises the CPH for "focusing on 'practical horticulture', delivered by skilled and enthusiastic horticulturists in a fantastic setting". Students come to RBGE, get dirty hands, learn lots, have fun and go home happy.



Fig. 4 RBGE Senior Horticulturist, John Dunn, teaching the CPH 'Growing Media & Potting' unit as a Saturday class at RBGE's Nursery. Photo: Leigh Morris.



Fig. 5 RBGE Arboriculture Supervisor, Martyn Dickson, demonstrating tree tying as part of the CPH 'Planting & Establishment' unit at RBGE. Photo: Emily Wood.

International delivery

As has already been mentioned, the first CPH syllabus was written at the NGBB in Istanbul in February 2007, and NGBB have now fully adopted the CPH within their educational programmes. Emily Wood and Alan Elliott from RBGE went to Istanbul in



Fig. 6 RBGE's Emily Wood (fourth from left) teaching soil texture testing as part of the two-week CPH course at NGBB in Istanbul in 2008. Photo: Alan Elliot.

2008 to deliver the CPH as an intensive two-week course to a group of NGBB horticulture staff (Fig. 6). NGBB then offered the CPH to adult learners in Istanbul during 2009 (i.e. one day per week). In May 2009 Leigh Morris went to observe teaching and verify the assessment of the practical exam. The standard of teaching and assessment was excellent, and NGBB are now continuing to offer the CPH annually, with RBGE carrying out verification and certification.

Thanks to the work of RBGE's Centre for Middle Eastern Plants (CMEP), the CPH is now being used to train horticulturists in different Arabian botanic gardens. In June 2007 a group of four staff from two fledgling botanic gardens in Yemen (Ta'izz and Socotra) came to RBGE to receive four weeks of intensive training, and within that period they completed the CPH course. Certificates in both Arabic and English were presented by the Regius Keeper, Professor Stephen Blackmore (Fig. 7). The Oman Botanic Garden (OBG) is a major project for CMEP, and a key part of the work is the training of OBG horticulturists. Leigh Morris, supported by different RBGE horticulturists (Fig. 8), will complete the delivery of the first CPH programme to 16 OBG staff in 2010. This first course has been delivered predominantly in English, but the next course in 2011 will be delivered by the OBG horticultural supervisors (who are in the first cohort) to their junior staff in Arabic.

The CPH is now being delivered in South-East Asia as well. In May 2010 two staff from RBGE went to Pha Tad Ke (PTK) Botanic Garden in Luang Prabang, Lao PDR, to deliver elements of the CPH course (Fig. 9). Two staff will



Fig. 7 Professor Stephen Blackmore and Tony Miller (second from right) and Lisa Banfield (front left) from CMEP, with the four Yemeni students who completed the CPH at RBGE in June 2007. Photo: Leigh Morris.



Fig. 8 RBGE Senior Horticulturist Sadie Barber (third from left at the table) teaching the CPH 'Seed Propagation' unit at OBG. Photo: Leigh Morris.



Fig. 9 RBGE Senior Horticulturist, Steve Scott (blue T-shirt), teaching growing media mixing at PTK botanic garden in Lao PDR, as part of the initial CPH training in April 2010. Photo: Leigh Morris.

return to PTK in December 2010 to deliver the entire CPH programme to PTK staff, as well as lecturers from the agricultural college in Luang Prabang, who are keen to offer the CPH within their curriculum. A CPH course is also being delivered at the Queen Sirikit Botanic Garden (QSBG), Chiang Mai, Thailand in early 2011.

LINKS WITH BOTANIC GARDENS CONSERVATION INTERNATIONAL

From the first time the CPH was envisaged it has always been the aim that it would become *the* practical horticulture training programme for botanic gardens worldwide. It was always believed that a strong link with Botanic Gardens Conservation International (BGCI) was fundamental to achieving this. Leigh Morris presented the ideas for the CPH (and the sister qualification the RBGE Certificate in Practical Field Botany – CPFEB) at the BGCI congress in Wuhan, China in April 2007 and the response from delegates was excellent. A presentation was also made at the BGCI Education Congress in Durban, RSA in November 2009 and following on from this BGCI agreed to endorse and promote the CPH programme. This formal link-up was announced in an article on the RBGE certificate programmes in the April 2010 edition of their *Roots* magazine (Morris, 2010) and subsequently at the BGCI Congress in Dublin in June 2010. The logo

of BGCI alongside that of RBGE will certainly give the CPH more credibility and will hopefully encourage more botanic gardens to adopt it as a training approach.

THE STANLEY SMITH (UK) HORTICULTURAL TRUST

A successful application to the Stanley Smith (UK) Horticultural Trust (SSHT) in 2010 resulted in RBGE being awarded a £35,000 grant to develop the CPH. The trust recognised the lack of a good practical horticultural training programme in the UK and believed that the CPH could provide this. This money has allowed RBGE to appoint a full-time CPH coordinator (Laura Cohen) for a 12-month period from August 2010. Laura will be part of the team which teach the CPH classes, be the main point of contact for students, organise teaching at RBGE, carry out verification at other gardens offering the course and further develop and promote the CPH programme.

THE FUTURE FOR THE CPH

A student handbook for the CPH will be produced in 2011. Improved materials to support the tutors will also be produced including resource lists, lesson plans and skills checklists. RBGE has looked at practical training in other vocations; the model used by PADI (Professional Association of Diving Instructors) to teach scuba diving around the world is an excellent example to learn from, and the aim is to produce similar materials for the CPH. Laura Cohen will lead on these developments.

The model of RBGE acting as facilitator and verifier for the CPH to enable other gardens to deliver the course is working extremely well at NGBB and the Eden Project. OBG and PTK botanic gardens will also soon be delivering the course themselves. The vision is for the CPH to be delivered by staff within many botanic gardens globally, and to facilitate this RBGE are to offer 'train the trainer' workshops within different regions. The first of these is set to take place in partnership with BGCI at QSBG in January and February 2011. This course is open to staff from botanic gardens in South-East Asia and elsewhere. As more gardens offer the CPH, the issue of quality and verification will become important; RBGE is going to develop an accreditation process for CPH instructors (as PADI do with scuba diving) and they will also retain control of certification. The challenges with verification and certification at other gardens is clear, and so RBGE will only sanction those gardens that show the required standards and enthusiasm to offer the CPH programme.

Some more work is still required on refining the course content, and the first stage in this process will be to compile a list of 'fundamental practical horticultural skills' such as digging, using secateurs, taking a cutting, mixing compost and potting a plant. This list of skills will then become the final framework of the course, which will be used in the creation of the course handbook and teaching materials. This paper has already highlighted the changes in unit titles that have taken place over the last four years and

whatever is included, there will always be somebody who believes something is missing or unnecessary. The belief, however, is that with the combined experience gained to date, the next version of the CPH will have longevity.

The CPH model shows that educationalists within botanic gardens can play a key part in facilitating horticulturists in their delivery of training, by providing standardised, yet adaptable, teaching frameworks, presentations and support materials. RBGE believe that the key strengths of the CPH are its simplicity and flexibility and its focus on students doing practical activities and getting their hands dirty. RBGE has high ambitions for the programme and, with the support of SSHT and BGCI, their belief is that it will become a benchmark for practical horticultural training within the botanic garden sector.

For more information on the CPH and its companion qualification, the RBGE Certificate in Practical Field Botany (including pdf files of the course handbooks), please refer to the RBGE website: <http://www.rbge.org.uk/education/professional-courses>

REFERENCE

MORRIS, L. (2010). Certificate Courses – changing the way you grow and identify plants. *Roots*, 7(1) (April 2010), Botanic Garden Conservation International (BGCI), 5–7.