

cies in the next five years. Plant assessments will remain similar to those made at Long Ashton. Standard appraisal forms which give guidance on how to score characters, such as flower colour and quantity, will be analysed once a year to determine the best plant selections to be given the LA suffix. At that time the name of the nurserymen who supplied the selected clone will be released, but the other suppliers will remain anonymous.

Plants propagated from the selected clones will gradually become available through the trade in the next few years. Two specimen plants of each selected clone will be held at Long Ashton until the new material is widely available in commerce.

Close collaboration between nurserymen, the collaborators at experimental horticultural stations and colleges and research workers will be essential for this scheme to make a large contribution to the health and quality of hardy nursery stock in the United Kingdom. Figure 1 shows how the various groups contributed to the Long Ashton Clonal Selection programme. The cooperation of the International Plant Propagators' Society, the Horticultural Education Association and the Royal Horticultural Society is gratefully acknowledged; without their help and that of the nurserymen, the clonal selection scheme which aims to improve the quality of the woody plants available in the U.K. would not make such rapid progress.

CLONAL SELECTION SCHEME

B.E. HUMPHREY

Hilliers Nurseries

Ampfield, Hants

1. **What is the Scheme?** It is a voluntary system whereby growers and other interested parties are invited to contribute to the Scheme material of certain selected plants. The material is then propagated and grown on at certain specific independent Centres. When appropriate, assessments are made by a panel of growers, advisors and specialists. The assessors, over a period, try to appraise the plants from the different sources to ascertain whether: —

- a) They are true to name (untrue plants are removed from further appraisal.)
- b) There is sufficient variation among the true plants to warrant further appraisal.
- c) If there is sufficient variation, the Panel then tries to decide if one plant is superior to the rest when judged over a number of specified factors.

- d) If an individual plant is judged superior, it is then given an identity code L.A. (after Long Ashton who are responsible for the Scheme) and further identified by a number representing the year of identification, e.g. L.A. 79 represents those plants selected in 1979.
- e) After selection, the plant is bulked up and redistributed to the trade.

2. **Aims of the Scheme.** Clonal selection is an attempt to upgrade the general quality of the nurseryman's "bloodstock". As such it may be compared with the efforts of the livestock industry.

The Scheme is an upgrading of what is already available and in general cultivation by selecting *within* a cultivar, *not* an attempt to select *between* cultivars and possibly replace one cultivar with another.

The result of the Scheme is not to *change* standard cultivars but, hopefully, upgrade them.

3. **Origin of the Scheme**

- a) A.R.C. designated Long Ashton as the primary centre concerned with investigation into basic plant material being used in Hardy Nursery Stock, including its genetic potential and health status.
- b) In line with similar work in fruit where several different clones of 'Cox' apple had been found, it was decided to apply similar investigations into nursery stock.
- c) Work started in 1975 on a collection of common plants, some with known problems.
- d) Nurserymen were shown the first results at an I.P.P.S. Meeting and Open Days.
- e) In 1978, further discussion with growers took place and as a result, I was asked by Charles Notcutt — at that time, Chairman of the Joint H.T.A./N.F.U. Nursery Stock Committee — to prepare a discussion paper and try to form a Sub-Committee within the Scientific Section of the Joint Committee. I was fortunate in obtaining the agreement of a number of prominent growers and representatives of important nursery companies, together with representatives of the Advisory Service, the I.P.P.S., and individual specialists to become committee members.
- f) An inaugural meeting of the new Clonal Selection Committee took place on 19th June 1979.

4. **Main functions of the Committee**

- a) Advise relevant departments at Long Ashton on how the Scheme may best be run including the vital question of which plants to select for trial.

- b) Provide a panel for the appraisal of the plants under trial and matters related to correct nomenclature, etc.
- c) Aid Long Ashton and other bodies as appropriate in preparing Reports for publication on the results of the trial.

5. Rules for participating growers. Material submitted becomes the property of the Scheme but priority of distribution of the L.A. selection to be given to the donating grower who would *distribute it equally to other interested growers.*

Participating growers must be expected to either be prepared to bulk up from the material at Long Ashton or allow another grower to bulk up if they were not willing to do so.

The Committee reserves the right to remove distribution from a grower who was not satisfactorily distributing selected material.

The "type" plant to be held in cultivation either at Long Ashton or another establishment yet to be decided for a minimum period of several years.

Plants or "sub-clones" would be identified by the designation L.A. with numbers indicating year of identification e.g. L.A. 79.

6. Criteria for appraisal and selection

- a) trueness to name
- b) propagation characteristics
- c) growth — vigour and habit
- d) flower/foilage
- e) fruit
- f) health status

7. Selection of plants for investigation

Main factors taken into consideration by Committee in selection of plants:

- a) economically significant
- b) balance between cheap/expensive to produce plants
- c) where areas of confusion in nomenclature exist
- d) plants that would benefit from investigation, i.e. from point of view of health or where there are a number of unidentified clones.

8. Subsequent meetings of the Committee have made the following decisions and taken the following action:

Invited a number of other Centres to act as gathering/appraisal centres to spread the effort and speed up the process.

Drawn up a basic list of nearly 100 plant types and planned a programme of appraisal as far as 1986. This programme is not intended to be inflexible but serves as a guide to all concerned regarding work loads, forward planning, etc.

Drawn up a programme of appraisal groups (3 to 4 members of the Committee) and appraisal meetings including the design of a standard appraisal form, and carried out appraisal selections on a number of plants.

Designated four plants for L.A. status as follows:

Plant	Source
<i>Daphne</i> × 'Somerset'	Merrist Wood
<i>Cornus alba</i> 'Spathei'	Darby Bros.
<i>Potentilla</i> 'Tangerine'	Coles of Leicester
<i>Forsythia intermedia</i> 'Lynwood'	Wyevale

An offer of virus testing has been made from the Virology Unit at Oxford.

9. Support from the trade

Official support from the Joint Committee has been tremendous culminating in a vote of financial support on a significant scale.

Support from the trade in sending in plant material has generally been poor.

Don't be put off if you think your plant may be untrue, unhealthy, or inferior!

The wider the spread, the more successful the Scheme.

The Centres:

Long Ashton Research Station Long Ashton, Bristol	(Miss R.A. Goodall)
Askham Bryan Agricultural College Askham Bryan, York YO2 3PR	(Dr. Bruce Rigby)
Merrist Wood Agricultural College Worplesdon, Nr. Guildford, Surrey GU3 3PE	(John D. Shaw)
Luddington Experimental Hort. Station Stratford on Avon, Warwick CU37 9SJ	(Miss Pat Cooper)
Writtle Agricultural College Nr. Chelmsford, Essex CM1 3RR	(David Gilchrist)
Efford Experimental Hort. Station Efford, Lymington, Hant	(Miss Margaret Scott)
Brooksby Agricultural College Brooksby, Nr. Melton Mowbray LE14 2LJ	(P. MacMillan-Browse)
Wye College Near Ashford, Kent	(T.W.J. Wright)
Somerset College of Agriculture Cannington, Nr. Bridgwater TA5 2LS	(Roy Check)

Members of the Clonal Selection Committee:

D. Anderson	Darby Bros.
Edward Back	Fargo
A.R. Carter	I.P.P.S.
M. Clift	Waterer's
C. Coe	Sloccock Nurseries
D. Clark	Notcutts

Miss R.A. Goodall	Long Ashton
Dr. Ian Campbell	Long Ashton
Mrs. Janet Flynn	St. Bridget Nurseries
Jack and Jillian Matthews	Matthews Fruit Trees
S. Haines	James Coles & Sons
C.R. Lancaster	
M.T. Wallis	Scotts Merriott
J. Watkins	Wyevale Nurseries
G.J.E. Yates	Merrist Wood
Chairman:	
B.E. Humphrey	Hillier Nurseries

G. TURNER: What provision is being made for keeping the selected clone at one centre, in order that growers may compare their existing clones with the approved clone? I am very concerned that at the moment you are introducing a Long Ashton clone which is selected from eight plants without comparing with superior plants at other nurseries.

B. HUMPHREY: I couldn't agree with you more, so send your plants in, too. The success of this scheme will depend on the degree of participation by growers and quite clearly to make a selection from two or three plants makes the whole thing nonsense. I think we have 24 clones of *Betula pendula* 'Dalecarlica' but it is hard work getting people to submit something. The industry has got to take an interest and respond over a period of time or I, for one, will lose interest. You are right that to make a selection from as few as eight clones is not ideal, and the more clones the better. As for keeping the plants, probably we would just keep the L.A. clone, as you can just imagine the problem of keeping all the others.

G. TURNER: It would be ideal if there was a L.A. clone plant of each species somewhere so that if you particularly felt your clone was better than say — *Spiraea* 'Anthony Waterer' clone plant then you could compare your plant.

B. HUMPHREY: We are planning to keep them at Long Ashton only at the moment, and if they had problems with the facilities and resources we may then decide to opt for other centres as well. We are very aware of the necessity to keep the clone for a significant period of time. The length of time would depend on the plant; if it is a shrub likely to be superceded by some superior cultivar, clearly there would be no point in keeping it forever. A marvelous job was done on selection of 'Crimson King' by East Malling, who showed that the Hadlow clone was much easier to bud than the Hillier clone and it transformed our budding take enormously.

G. YATES: I would like members to note that you must send these clones in. At other centres the response has been slight. In our own case we are waiting for cuttings of *Chaenomeles* 'Kna-

phill Seedling' but we haven't received any at all yet. The *Daphne* 'Somerset' clone received from Long Ashton is magnificent but so far only three nurseries have requested material.

M. DUNNETT, Chairman: Brian and Ian will do their bit very adequately, but if people don't respond with cuttings, and the L.A. clones are not taken up afterwards, then the scheme won't work. That, to me, would be a disaster. The scheme may have certain shortcomings, but unless it is given a try we shall never know.

COLLECTING PLANT MATERIAL IN VIRGINIA

A. BRUCE MACDONALD

*Hadlow College of Agriculture and Horticulture
Hadlow, Tonbridge, Kent.*

During August, 1979, my family and I were on holiday in Hampton, Virginia, situated on the south-eastern seaboard of the United States, where we stayed with James D. Ashley (I.P.P.S. Southern Region) and his wife, Beatrice. We had the privilege to meet a number of fellow I.P.P.S. members and friends which included, firstly, Robert McCartney of the Williamsburg Foundation which contains many interesting native plants. Secondly, Ken and Sandra McDonald of Le Mac Nurseries in Hampton, a foremost grower of field and container-grown azaleas. Thirdly, Charles Parkerson of Lancaster Farms in Suffolk, a quality container grower, in particular for junipers and hollies. Fourthly, Pam Harper of Robanna Shores, Seaford, a most enthusiastic plantsman who has an interesting and successful business — "The Harper Horticultural Slide Library".

When in their company one is naturally encouraged by their enthusiasm to obtain plant material. One subsequently realized that this was not plant collecting in its true word, as it was not obtained in its native habitat. However, the aim of this paper is not to discuss the merits and limitations of individual plants but to briefly relate the procedures involved in the transportation for a three to four week period of unrooted plant material often in daytime temperatures of over 32°C (90°F), together with information on their subsequent aftercare.

Procedures. Following the advice of James Ashley I purchased a large icebox from a local discount store. One person could easily handle this size container and it contained a tap to drain off water collecting at the base. The major problem I was confronted with was to prevent desiccation of the plant material under such high temperature conditions. The cuttings, on collec-