

WELSH PLANT BREEDING STATION

Director : Professor J P Cooper, CBE DSc FRS

ARC CE USERS GROUP MEETING

Thursday, 13 October 1983

PROGRAMME

9.45 - 10.15 am Coffee
10.15 am Welcome by Dr D Wilson
followed by Discussion: Chairman : Colin Eagles

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AGENDA

1. Minutes of meeting at LARS 7 November, 1982 and Matters Arising.
 2. Management, staffing, allocation, running costs, project costs.
 3. ARC Headquarters matters and policy.
 4. Maintenance, servicing, spares.
 5. New CE equipment.
 6. Heat reclamation.
 7. Microprocessor control.
 8. Instruments, sensors.
 9. Management of and problems with growth of plants in CE.
 10. A O B.
 11. Next meeting.
- 12.15 pm Lunch
- 1.15 pm Introductory talk on WPBS CE facilities.
- 1.30 pm Tour of facilities.
- 2.30 pm Tea

Minutes of the 1983 ARC CE Users Group Meeting held on 13 October 1983 at the
Welsh Plant Breeding Station

1. The minutes of the 1982 meeting were approved.

2. Management, staffing, allocation, running costs, project costs.

Running Costs: Abbot (LARS) reported that the total running costs including depreciation and the buildings necessary to house their large CE Rooms were £200 per week; on the same basis Fisons 600 cabinets cost £25 per week. Harvey (JII) commented that if CE facilities used by a particular project were costed directly to the project then it could make that project seem very expensive.

3. Several participants stressed the need to schedule lighting periods carefully to take maximum advantage of 'night rate' electricity without incurring maximum demand penalties.

4. ARC Headquarters matters and policy.

Future Projects: Grimshaw (ARC) stressed that the outlook for major CE projects was not good in the immediate future. There was also considerable pressure from the Department of Trade and Industry to buy British equipment where possible, and where British equipment was not available to a suitable specification DTI money may be available for development work.

VAT: Moorby (ARC) reported that VAT should be zero rated on any major item of equipment that was fixed as part of a building. On CE and similar large facilities this could produce a worthwhile saving.

ARC Computer Centre: A meeting had been set up by the centre on 28 October at Rothamsted to discuss computer control in glasshouse. However, the main practical effort in this sphere was being conducted at GCRI, with help from ARC.

4. Maintenance, Servicing and Spares

The discussion centred mainly around problems and improvements in lighting.

Fluorescent tube control gear: Problems with starters for 8-foot tubes may be overcome by replacement with electronic starters (Pulse starter EFS 800, from Arlen Electrical, Arlen house, 808/9 Oxford Avenue, Slough. Phone 37921, cost about £2). Dickinson (PEL) reported that electronic ballasts were now available costing £18 for two lamps, these give 25% power saving, and have cheap attachments for dimming (50 lamps for £170). Some doubt was expressed (Hubbard, RES) as to whether the electronic ballast was reliable enough for CE use.

Replacement of Standard by Slimline tubes: Hole (NVRS) reported that replacement of the bottom row of 28 tubes in the Saxcil by 26 mm dia tubes gave a 28% increase in light of which 18% was attributable to the newness of the tubes. Replacement of the light bank by 42 tubes, closely spaced in a single row gave a 38% increase in light, with 18% being attributable to the newness of the tubes. Simmons (WRO) stated that it was important to replace starters when replacing with slimline tubes but no other control gear modifications were required.

Use of Mercury Halide Lamps: Moorby (ARC) reported that GRI's problems with compact mercury halide lamps exploding had been caused by lamps 'seeing' each other and overheating, thus deep reflectors were required around each lamp.

Performance of Mercury Halide Lamps: Harvey (JII) presented a report on the performance of mercury halide lamps in a lamp housing and a copy is attached.

Artificial Lighting in Horticulture: Copies of a paper by Canham (Dept of Agriculture and Horticulture, University of Reading) on recent developments in artificial lighting in horticulture were distributed at the meeting.

Disposal of Fluorescent and Mercury Lamps: Cockshull (GCRI) reported seeing details of a 'shatterbox' for safe disposal of lamps, supplied by Castell Safety International, Kingsbury Road, London, NW9 8UR, 01-200 1200 cost £1500.

5. New CE Equipment

The Weiss installation at JII was still incomplete. A temperature gradient tunnel had been completed at WPBS, 2 walk in Weiss rooms (4 m²) had been completed at Dept of Agriculture, Belfast.

A number of daylight 'hot boxes' 1 x 1.25 x 0.75 m controlling between 16 and 40°C on a central glycol supply have been built at Rothamsted, and further details are available on request (from Pearman, RES).

6. Heat reclamation

Discussion showed that although initially an attractive principle, heat reclamation was very difficult in practice due to the problem of matching waste heat availability and quality with potential uses of the heat.

7. Micro processor control

GCRI was developing an ARC control system based on a B8C microcomputer (£2,500) with outstations (£1,000) at each piece of equipment controlled. The system was demonstrated and will be further developed by the next meeting. Eagles (WPBS) reported using ZX81 for primary conditioning control and Hole (NVRS) was using an Apple 2 based data logging system.

8. Instruments, sensors

Simmons (WRO) showed a cheap humidity detector based on the Mullard sensor. Weaving (NIAE) described the arrangements between NIAE and Plessey which it is hoped would lead to new humidity sensor based on spectrally specific infra-red lamps.

9. Phytotoxicity

Hole (NVRS) reported that Hardwick (NVRS) and Hannay (Imperial College) had identified the toxic component of PVC as the plasticiser dibutyl phthalate. This had replaced the previous (non phytotoxic) plasticiser dioctyl phthalate in 1980, and has found in cable, glazing strip and hoses from waste PVC. If there is any doubt about the quality of PVC bell jar, biological tests using 'Derby Day' cabbage are recommended, and further advice is available from NVRS.

A meeting between ARC and BSI has suggested that the plasticiser di decyl phthalate is used in future for all horticultural applications.

10. Water cooled condensers

Hubbard (RES) reported that they were only suitable for applications of above 20 tons capacity and can be expensive to run. Simmons (WRO) stressed the need for comprehensive information from suppliers of water cooled systems particularly with regard to water treatment to keep corrosion and algal growth under control.

11. Next meeting

The 1984 meeting will be held at the Glasshouse Crops Research Institute, local secretary R Randall. The visit to John Innes Institute was postponed until 1985.

LIST OF PARTICIPANTS
ARC CE USERS GROUP MEETING 1983
AT THE WELSH PLANT BREEDING STATION

D M Harvey M R Aldous	John Innes Institute, Colney Lane, Norwich.
G S Weaving	National Institute of Agricultural Engineering.
T C Clark	MAFF, Analytical Chemistry Workshop Block B, Brooklands Ave., Cambridge
D Dickinson (Plant Environment Lab.) P Hadley (Horticultural Research Lab)	University of Reading, Shinfield Grange, Reading, RG2 9AD.
J Moorby A Grimshaw	Agricultural Research Council, 160, Great Portland Street, London, W1N 6DT.
C G S Walter J M Whipp V Priest	Letcombe Laboratory, Letcombe Regis, Wantage, Oxon.
R Cox	Plant Breeding Institute, Mavis Lane, Trumpington, Cambridge.
C C Hole J R Bolton A Morgan	NVRS, Wellesbourne Warwick, CV35 9EF.
P Wiggell	ADAS, Regional Office, Cambridge.
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