

CONTROLLED ENVIRONMENT USER GROUP 1980

Thursday 23 October 1980

The meeting was held at M.A.F.F. Harpenden Laboratory and visitors were welcomed to the laboratory by Mr R. Lelliott, Head of Plant Pathology.

People present

Mr F Sandwell - Chairman	M.A.F.F.
Mr R Brooker - Secretary	Hatching Green
Mr R Lelliott	Harpenden
Mr R Polley	Herts
Dr J King	
Dr C G Gutteridge	Long Ashton Research Station
Dr E J Skerrett	Long Ashton
Dr T Johnstone	Bristol BS18 9AF
Dr P Turner	
Dr C C Hole	National Vegetable
Miss P A Scott	Research Station
	Wellesbourne
	Warwick CV 35 9EF
Mr C Mountfield	Glasshouse Crops Research
Mr C R Hoburn	Institute
	Worthing Road
	Rustington
	Littlehampton
	Sussex BN 16 3PU
Mr D Filey	Wrest Park
	Silsoe
	Bedford
Dr G Thorn	Rothamstead Experimental Station
Mr D Hubbard	Harpenden
Mr I Pearman	Herts
Dr R MacDonald	Scottish Horticultural
	Research Institute
	Invergowrie
	Dundee DD2 5DA
Miss M A Ford	Plant Breeding Institute
	Maris Lane
	Trumpington
	Cambridge CB2 2LQ
Dr J Moorby	Agricultural Research Council
	160 Great Portland Street
	London W1N 6DT

Dr K Bambridge	School of Agriculture
Mr L Heathcote	Sutton Bonnington
Mr M Yeomans	University of Nottingham
Mr P Wiggell	M.A.F.F.
	Brooklands Avenue
	Cambridge
Mr B Wilson	Wye College
	University of London
	Near Ashford
	Kent TN25 5AH
Mr D Avery	East Malling Research Station
	East Malling
	Nr Maidstone
	Kent
Dr C Eagles	University College of Wales
	Welsh Plant Breeding Station
	Plas Gogerddan
	Nr Aberystwyth SY23-3EB
Mr D Dickinson	Dept. of Agriculture
	Plant Environment Lab
	University of Reading
	Shinfield
	Reading RG2 9AD
Dr E J Evans	M.A.F.F.
Dr E R Taylor	Block A Government Offices
	Coley Park
	Reading RG1 6DT
Mr A Canham	University of Reading
	Applied Research Section
	Dept. of Agriculture
	Shinfield
	Reading
	Berks
Mr C H S Walter	Agricultural Research Council
	Letcombe Laboratory
	Wantage OX12 9JT
Dr J Caseley	W.R.O.
	Begbroke Hill
	Yarnton
	Oxford

1. Previously circulated minutes of 1979 meeting were approved. There were no matters arising.

2. Monitoring Environmental conditions within cabinets

Clive Mountfield (GRCI) was interested in using a microcomputer for monitoring and data handling. They are at present considering an 'Apple' or 'Pet' personal computer for the task. The meeting was asked for any advice.

Jeff Morby (ARC) told the meeting that NIAE were using 'Texas Instruments' hardware for glasshouse control. Stan Burrige and Brian Wilson (Wye College) was using a 'Pet' for rudimentary glasshouse control. They were approaching the Ministry for development funds.

Roy MacDonald (SHRI) was looking at the accuracy of sensors and radiation and humidity sensors. He was planning to try silicon temperature sensors made by Texas Instruments.

Francis Sandwell (HL) was using a 'Pet' microcomputer for something similar and would be discussing this later.

3. Lighting

Ian Pearman (RES) described the new type of fluorescent lamp from Philips with an improved red/far red output. They were currently evaluating these lamps, with and without tungsten supplements, on sugar beet.

Francis Sandwell (HL) described 'trulite' fluorescent lamps designed to mimic sunlight. These had not been used but literature was available.

Gillian Thorne (RES) asked what other members were using where it was not possible to use full size tungsten lamps. Pigmy lamps were used and also opal round with pigmy fittings.

The meeting felt some research into some of the new light sources available would be extremely useful. Alan Canham (Reading) felt he may be able to undertake some work in this direction and interested parties should contact him directly.

4. Data Logging

i) Prevention of Data Logger Interference

John Caseley (WRO) described problems with a 'Micro Consultants IMP' data logger. The machine was thought to be stopping due to intermittent mains 'spikes'.

Francis Sandwell (HL) has similar equipment and had not experienced problems with it. However a 'DEC PDP8' at the lab suffered from what was believed to be a mains problem and turned out to be an internal electronic problem.

Standard approaches to the problem are:-

To suppress all 3 phases of mains supply if the other 2 run near the equipment.

Extend the mains feed cable to suppress spikes.

Contact the local Home Office telecoms engineer who will investigate the supply on site.

ii) Using a personal computer to extend the power of existing data logging equipment.

Francis Sandwell (HL) talked about the problem of obtaining an immediate and readily understood indication of environmental parameters using modern data logging techniques. Most equipment generates a vast jumble of figures which required detailed analysis. By interfacing a 'CBM pet1 microcomputer to logging equipment environmental variables are displayed in real time in a manner easily understood even by an untrained operator.

5. Saxcil Cabinets

i) Performance when fitted with Stafa controllers

Ian Pearman (RES) reported satisfactory results with the controllers although they had not yet completed a full range or long term test. They were expensive at about £1,000 per cabinet but had the advantage of interchangeability. A sample temperature and humidity trace was available.

6. New Controlled Environment Cabinets

i) Rothamsted simple room

Ian Pearman (RES) has completed a set of dry bulb runs and the results were impressive although the full performance range was not yet known. Stafa controllers are now used, and the design details are available from him.

ii) Weiss Cabinets

GCRI have ordered 3 Weiss and the specification was available to the meeting. The only problem so far was delay in answering letters. There was a high standard of workmanship however and the cost was £66,000 for 3 cabinets. Delivery time was 5 months. Weiss equipment was purchased because the reliability of their research sensor led to faith in their claims, the delivery time was good.

iii) Fisons Cabinets

Francis Sandwell (HL) had visited Fisons recently and considered the product to appear well made. Literature was available.

C Walter (Letcombe) had some Fisons cabinets which were performing to specification. There were originally a number of detail faults such as the location of the temperature sensors but these had been solve d. The design and engineering department were better contacted than the sales department who aimed to sell a package.

7. Running costs of CE facilities

John Casely (WRO) discussed reducing running costs. This was being done by reducing electrical demand at peak tariff times and reducing weekend supervision with a more sophisticated alarm system. Ideas from the meeting most of which are in use at various installations were:-

- a) switching day and night regimes to utilise lower tariff.
- b) ducting hot air from lamp housings for space heating.
- c) staggering user times.
- d) use of refrigeration heat although this may incur high capital cost if not planned at start of the installation.
- e) using more efficient lamps.

Perspex lamphouse ceilings

Ian Pearman told the meeting that normal perspex has a life expectancy of about 10 years in this application. ICI recommended perspex VA as a replacement.

Sutton Bonnington have used glass which is ideal from a cleaning and scratching view.

Polycarbonates such as lexan were thought vulnerable to scratching and attack by organic solvents.

Double skinned acrylics as manufactured by Humitek and used in glasshouses were thought promising but no-one had yet tried them.

8. Any Other Business

Ian Pearman (RES) was looking for a replacement for aluminised melinex. Fisons can provide a list of suppliers.

GCRI have a list of surplus equipment available free of charge to anyone interested. (A list is enclosed).

Francis Sandwell (HL) proposed to compile a list of CE users to include type of cabinets and use, and peripheral equipment. Rod Summerfield (Reading) has done a survey of facilities available, therefore the proposal was not taken up.

East Malling are setting up a CE facility and asked the meeting for advice regarding pests and diseases.

Generally agreed points were:-

- a) There were inherent problems with staff mobility.
- b) Cleanliness was essential.
- c) Fumigation should be done in case of a specific outbreak only.

Phytotoxicity

This has been a problem in the walk-in rooms at Harpenden. The problem is thought to be mastic sealing compound used to make the rooms airtight.

General points arising were:-

There are safe silicon sealers available.

Plasticisers from hoses, flex and pots can be a problem.

Food or medical grade should be used if possible.

Also potentially troublesome were :-

Zinc in water pipes, monal metal - nickel toxicity, varnish on electrical windings, ethylene from fluorescent light gear, some paints.

Next Meeting

Glasshouse Crops Research Institute have kindly agreed to host the next meeting and the date will be advised.

HL Facilities

Following the meeting and lunch there was a tour of HL facilities, consisting of:-

- 1) 6 'Dewpoint Cabinets' designed by NIAE and built by EAC, a Blackpool firm.
- 2) 5 Walk in rooms built to a custom design by S F Air Ltd. One of which has negative pressurisation.
- 3) CE office containing the monitoring equipment.
A Microconsultants 'IMP' data logger interfaced to a 'Pet' microcomputer and controlled by a general purpose Desktop computer.

Useful Addresses

Jaynor International Ltd (Importers of Trulite fluorescent lamps)
Aqua House
Oak Avenue
Hampton
Middlesex TW12 3PR
01 979 6003

Commodore Information Centre (Pet Personal computer)
360 Euston Road
London W13 BL
01 388 3702

Apple Personal Computer
- see Personal computer magazines.

Microconsultants (IMP data logger)
Interface House
Croydon Road
Caterham
Surrey LR3 6QD
Caterham 48921

Far Red Knitting Tubes

Plant Physiol vol 6k (1979) 1013-1021
Deitzer, Hoges & Jabber.

Catalogue no is Westinghouse FH8T12/1R/VH0

UK Agents Troughton & Young Lighting Ltd,
Gerrards Cross
London.

Silver Polyester film 60m x 5m from:-

Graphic Display Products Ltd
173-179 Tyburn Road
Erdergton
Birmingham