

**MINUTES OF THE 1989 MEETING OF THE
CONTROLLED ENVIRONMENT USERS GROUP**

The annual meeting of the CE Users Group was held on 12 October 1989 at Rothamsted Experimental Station.

1. Apologies

Apologies for absence were received from L Incoll and R Randall.

2. Minutes of last meeting

The minutes of the meeting held on 29 September 1988 were approved, subject to alteration in item 5 (Control Systems) of 'Fitronic' to 'Fisons'.

3. Matters arising

There were no matters arising.

4. Management Staffing Running Costs

Rothamsted hasn't updated running cost estimates.

5. Control Systems

The meeting discussed members' experiences with different types of control systems.

Rothamsted has purchased some Elliwell controllers, to replace older thermostats. They can display temperatures, set points and dead zones ($\pm 0-18^{\circ}\text{C}$); changeover time is < 30 secs.

There was discussion between Rothamsted and Littlehampton on problems with the Envirocon system, including speed, loss of channels and feedback from vent motors.

A discussion between Shell and LARS on Fisons Format 400 and Jumo controllers centred on susceptibility to power surges and ease of programming.

John Innes and Rothamsted both reported successful use of Stafa controls.

6. Lighting

Imperial College reported that flicker from fluorescent tubes was affecting insect development in their CE facilities. I Pearman (Rothamsted) suggested that the 50 Hz flicker might be overcome by using the new HF tubes (20 KHz), as used at Rothamsted.

Long Ashton reported problems with Melinex degradation with 250W metal halide lamps. John Innes avoided these lamps because of this problem, though Shell experienced no degradation using 400W double shielded lamps. Rothamsted had some Perspex degradation with 1000 w mercury vapour lamps and 2000 w HQI lamps.

Ian Pearman (Rothamsted) mentioned a new development, the Thorn Triton lamp. Designed for use in aquaria, the lamp has a listed decay of only 5% at 7000 hours and switches off automatically at the end of its working life (approx. 8500 hours). He also

pointed out that modern, slimline tubes are more sensitive to temperature: information from Philips suggests that the tube responds to the temperature of its coldest spot, not to the mean ambient temperature.

7. Instrumentation

There was no discussion on these items.

8. Humidification and irrigation

Imperial College asked for information on methods of inducing stress, other than by watering/drying out. He was referred to the method demonstrated last year at Leeds, using porous blocks.

9. New equipment etc

Part of the new Insect Rearing Facility at Rothamsted would be demonstrated later. Completion was expected within one year. Energy efficient refrigeration, based on 7 Rotacold units, is being installed; it is considerably smaller than conventional units.

10. Plant growth problems

IPSR reported a problem with growth of maize in EAC cabinets, namely wilting of leaf tips. The same seed grew well in Reading's cabinets. IPSR had already eliminated pot type and water quality as the cause of the problem.

J Franklin (Rothamsted) had encountered leaf wilt in Phaseolus grown at high light intensity; the problem could be overcome by shading.

Shell reported that slight changes in pot temperature influenced shoot development (an effect on Ca^{++} transport?) in Chinese cabbage.

11. CO₂ concentrations in recirculating cabinets

Imperial College were building a system with 2 air changes/minute and 2% influx of outside air; they asked for information on CO₂ concentrations.

Rothamsted used up to 600 litres $\text{min}^{-1} \text{m}^{-2}$ to avoid CO₂ depletion greater than 20 ppm. Chris Hole (Wellesbourne) said they used CO₂ supplementation even with 6 air changes/hour.

12. Safety

The Chairman reminded the meeting that the COSHH Regulations would apply to work in controlled environment facilities where hazardous substances were used.

Methods of pest control were discussed, including types of pesticide used, training of operators and the use of 'environmental' methods of control (eg increasing the temperature of the empty cabinet to kill aphids). The Chairman agreed to

consult MAFF about use of pesticides in CE facilities.

Further discussion followed on the question of CO₂ enrichment/O₂ depletion in CE rooms. There were suggestions that HSE might require viewing windows in areas carrying risk of asphyxiation, and that lone worker alarms or room occupied lights were also appropriate.

13. Any other business

Imperial College were at the planning stage for new CE facilities at Silwood Park and asked for help in relation to their air handling facilities (of which there had been some criticism).

Julian Franklin (Rothamsted) received no response to his question on special precautions for growth of genetically manipulated plants.

C.E.U.G. 1989

PARTICIPANTS

| | |
|---------------|-------------------------------|
| C.Abbott | University of York |
| J.F.Egan | ICI Agrochemicals |
| R.M.G.Tebutt | ICI Agrochemicals |
| P.A.Tatham | MAFF, Hatching Green |
| A.Sturz | Dow Chemical Co. |
| R.F.Hughes | IACR Long Ashton |
| R.G.Parkinson | IACR Long Ashton |
| P.Turner | IACR Long Ashton |
| S.Johnson | RBG Kew |
| A.Cross CIBC | |
| J.Weir | Farm-electric centre |
| A.J.Harding | Hadlow College |
| P.C.Longden | Brooms Barn |
| P.G.Blackman | Sittingbourne Research Centre |
| N.Harries | Sittingbourne Research Centre |
| S.H-Crothers | Dept.of Agriculture N.Ireland |
| B.M.Roberts | IHR East Malling |
| J.Ross | IHR Littlehampton |
| R.Abrahams | IHR Littlehampton |
| M.M.Brown | IHR Littlehampton |
| C.C.Hole | IHR Wellesbourne |
| G.E.Crowhurst | IHR Wellesbourne |
| A.Morgan | IHR Wellesbourne |
| R.Woodpin | Imperial College |
| M.A.Ford | IPSR Cambridge |
| D.Dickinson | PEL Reading |
| C.F.Eagles | WPBS Aberystwyth |
| A.P.Gay | WPBS Aberystwyth |
| P.Millard | MLURI Aberdeen |
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| A.Nichols | JII Norwich |
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| J.Philipson | Forestry Commission Roslin |
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