

A.R.C. UNIT OF FLOWER CROP PHYSIOLOGY

Cabinet Users' Meeting (April 27th, 1966)

Dr. Austin, Dr. Bleasdale (N.V.R.S.), Mr. Carpenter (N.I.A.E.), Mr. Collip (Sutton Bonington), Dr. Graham-Bryce (Rothamstead), Dr. Hughes (Reading), Dr. Hurd (G.C.R.I.), Dr. Hussey (John Innes), Dr. Jarvis (Aberdeen), Dr. Martin (Agric. Oxford), Dr. Milburn (Glasgow), Dr. Moore (Agric. Cambridge), Dr. Taylor (U.C.L.), Prof. Wareing (Aberystwyth), Dr. Wilson (Scottish Hort. Res. Inst.)

1) The various aspects of cabinet design demonstrated at the previous meeting were again shown.

2) The discussion centred mainly on the maintenance of humidities above 75% R.H.. The situation is by no means yet understood, but the following points emerged:

- a) The shield to the humidity detector should be a proper reflecting surface. The simplest way is to cover the shield (not the black detector rod) with aluminium foil, back and front. This has improved control considerably at Reading.
- b) The proportional band should be as low as possible.
- c) The cabinet should be checked to find any bad leaks at seams due to distortion or loose rivets and to find any perforated pop-rivets.
- d) The problem is most acute where high humidities and low temperatures are required. The reason is that the heat uptake through the walls and ceiling of the cabinet and some of the heat of the lights and the fan motor has to be offset by the cooler. The lower the temperature of the plant space relative to the outside, the more difficult the problem. In circumstances such as these there may be no alternative to introducing moisture after the cooler bank but that should only be done as a last resort in which case a separate humidistat will be required.
- e) Where there is only a problem of initial humidification or the boosting of humidity to replace exchange of moist cabinet air with dry outside air (especially in winter), then moisture should be introduced before the cooler. It was felt that the previous warning against using steam was not justified provided it was not

used to such an extent as to overload the cooler. For a person with steam on tap it might be the moist convenient way. For others some form of spray might be simpler. A number of spray nozzles was demonstrated by Mr. Carpenter (see list for details) together with a spinning disc atomiser and the perspex trough with wet wicks for hanging at the top of the cabinet by the air outlet. He also showed a wet blanket steamer which could be used if the cabinets were continuously purged with fresh air, the fresh air passing through the steamer before entering the inlet port.

f) An alternative position for the humidity detector is being investigated at Reading. The detector (different from the existing one) is fitted in a pocket in the flow line between the pump and the inlet to the cooler bank. We should be able to report in the autumn whether this modification is really worthwhile.

3) The question of a small cheap, humidity detector for monitoring was discussed further, but there was no ideal design yet. One of the smallest reliable English mains electric fans (Airflow Development) was rather large, but several 6 v. D.C. motors are available (see list) which might be fitted with a fan. The speed of aspiration is important as is seen in the extract from the Chemical Engineers Handbook.

4) It is proposed to have further meetings of cabinet users from time to time, Professor Hudson (Sutton Bonington) has offered to be host for a meeting in 6-9 months time. Anyone with suggestions for topics should get in touch with Professor Hudson, Mr. Carpenter or Dr. Hughes.

June 7th, 1966.

A. P. Hughes.

Manufacturers of spray nozzles

1. E. Allman & Co. Ltd., Birdham Rd., Chichester.
Ceramic tip "fan spray" nozzles, with brass taper seating body to fit petrol unions. Size 0000 gives 10 l/hr at 30 p.s.i. 4/- each. Easily removed or rotated,
2. Geo. Bray & Co. Ltd., Leicester Place. Blackman Lane, Leeds.
Ceramic tip spray jets, with brass taper thread. 65° or 60° spray angle. 10/- for 10. Size 3.5 gives 10 l/hr at 20 p.s.i.
3. Delavan-Watson Ltd., Corsey Lane, Widnes.
Very large range of precision jets for all kinds of spraying. Available in brass as standard or a range of metals. Ranges down to 1½ l/hr complete with stainers etc. Expensive, but good.

Manufactures of components for constant-level tanks

1. Plastic box by:
Fisons Scientific Apparatus Ltd., Bishop Meadow Rd., Loughborough, Leic.,
Cat. No. BX/3, Price 12/7 each.
2. Ball valve by:
Fordham Pressings Ltd., Melbourne Works, Dudley Rd., Wolverhampton,
Price about 15/-.

Small Fans

Airflow Developments Ltd., Lancaster Rd., High Wycombe, Bucks.,
Price £3-£4

Wet Bulb Aspiration

See Chemical Engineers Engineers' (Parry) 3rd Ed. Page 777. 15 ft/sec. is the recommended air velocity for aspirating a wet bulb. Errors at 17 ft/sec and 0.40 ft/sec (typical natural convection) are as follows:

	Error as % of wet bulb depression.
At 50°F wet bulb & 17 ft/sec.	-1.3%
At 80°F " " " " " "	-0.8%
At 50°F " " "0.4 " "	-12.0%
At 80°F " " " " " "	- 7.0%

Various references are given.

Small D.C. Motors.

R.I.A.M. Morges Switzerland.

Rip Max, 80 Highgate Rd., London, N.W.15 (stockists of Marx-Luder motors).

Micro-Max (made by Faulhaber) can be bought in model aeroplane shops.