quite a number of people who have between them bred a wide range of plants. Much of the detail has been unrecorded and as a country we have not afforded these people the recognition they deserve. The story of the kiwifruit and some other New Zealand fruits are now well known, but in the area of ornamentals we have, perhaps, an even richer inheritance. Camellias, carnations, orchids, daffodils, dahlias, gerberas, lilies, rhododendrons, and zantedeschia spring immediately to mind. Some of these developments have found a place on the world market, while others, although of merit, have not received the promotion necessary to compete with overseas introductions.

Breeding a good new plant is only a starting point. If it is to find a place in world horticulture, each new development must be linked with good nursery management and good promotion. In New Zealand we have an ideal climate for plant breeding. If this activity can be supported by long term planning which will put in place the other essential links in a commercial chain, we could become the horticultural Mecca of the Southern Hemisphere.

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THE LIGHT INTEGRATING METER — AN ALTERNATIVE METHOD OF MIST CONTROL

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During the summer of 1982 Lyndale Nurseries set up a propagation unit at a new site in Whenuapai. This unit consists of four 60 × 20 ft. (18 × 6m) PVC film-covered tunnel houses containing a central bed with bottom heat and a mist facility plus two side beds without heat but with mist, including a weaning option, i.e. 1/1 to 1/10 misting. All the houses

are ventilated with louvres together with fans working under positive pressure.

The two systems initially installed to control the mist operation were:

1) A pre-set "off-on" cycle, i.e. a timer with the capabilities to operate regardless of the environment.

2) An "electronic leaf", which gives a variable "off-on" cycle dependent on the environment, i.e. 2 electrodes contained in a non-conductive substance which is placed under the mist at leaf level. At a certain level of dryness the "leaf" activates a solenoid valve.

Also used was a combination of these two systems, i.e. time-regulated mist application for certain hours, e.g. before 10 a.m. and after 5 p.m., plus the use of the "leaf" between these hours.

Despite the combinations available we were unable to maintain conditions which prevented wilting while at times giving an excessive build up of moisture in the rooting medium. This was particularly a problem in winter and cloudy periods. We felt that our weather was so changeable some days that the systems available to us were unable to be adjusted sufficiently.

We believe we now have a system which copes more efficiently with these weather changes. Firstly, we must recognise that energy input is required for evaporation and transpiration to occur and that solar energy, or sunlight, is the major source. This energy input affects the internal temperature of the leaf, stimulating stomatal openings and, therefore, raising the transpiration rate.

As available energy is influenced by:

1) time of day

2) weather - clouds, fog, rain, etc.

3) season

4) geographic location,

It seems appropriate that a misting system that relates to available energy would be more reliable in our environment.

The system we have chosen to use is a "Light Integrated Meter", which records available light energy and accordingly controls the timing of mist application.

The meter consists of:

1). a waterproof light sensor which is placed in a position out of any shade and is similar to the houses which are to be controlled.

2). a meter which records and gives a readout in calories per square centimeter; the meter has a six figure totalising counter and a four figure predetermining counter for control.

The calorie measurement used is equivalent to the quantity of light recorded in one minute on a sunny summer day. This calibration was done in Guernsey; we are finding it slightly less than one minute.

Operating the "Light Integrated Meter", The grower must decide after how many calories the mist is required — say 22 — and sets this amount on the meter, which then counts down to zero as the sun's radiation is recorded.

When it reads zero the misting system is triggered and the meter automatically resets itself to the original figure and begins counting down again.

As night falls, obviously recording stops, then recommences at sunrise the next day or, as we often experience, periods of bright sunlight dispersed with intermittent cloudy periods, the recording rate adjusts (Tables 1 and 2).

Problems (for us). To incorporate this system with our existing unit it was necessary to purchase a unit which would allow sequential watering. We chose a four-station "Irritrol" because it was the only unit readily available which could be calibrated in seconds. Through the "Irritrol" we are able to set the length of misting for each house. This varies according to crop and the type of nozzles used.

As with all misting controls the user must still determine the initial rate of mist application and, by observation, make any necessary adjustments. We feel that in using this system we are now achieving a greater degree of automation and control because of the allowance for external environmental changes.

Table 1: Seasonal and daily changes recorded by the "Light Integrated Meter".

Date	Calories	Date	Calories
Winter		Spring	
June 18	126	Sept 10	346
19	53	11	437
20	41	12	380
21	46	13	170
22	106	14	573
July 23	222		
24	239		
25	87		
26	246		
27	246		
		Summer	
Aug 8	393	Jan 10	635
9	405	11	563
10	216	12	420
16	464	13	567
22	104		
23	63		

Table 2. Daily range of recordings by the "Light Integrated Meter" (setting of 20)

Time	Calories Recorded on Oct. 8, 1984
7 30 a m	
10 00	36
12 30 p m	107
3 00	63
5 00	17

GERBERA PRODUCTION AND ITS PROBLEMS

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For the past ten years the Transvaal daisy or gerbera (*Gerbera jamesonii* H. Bolus ex. Hook f.) has steadily become more popular, thanks to advertising campaigns that have promoted the gerbera as a cut and pot flowering plant and as a bedding plant to be used and grown in the landscape. There are presently several strains of gerberas in the trade. In the U.S.A. the earlier Jongenelen material (double), semi-dwarf

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