To: Drew Brazier

From: Allan McDonald

Date: 90-02-14

Our File: 

Your File: 

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Re: SX 90 ---Q Nijssen LED Photoperiod Light Evaluation

Introduction

New technology in photoperiod lighting for plants has been developed by Nijssen B.V. in Holland. It relies upon light emitting diodes, manufactured specifically to produce a 660 nm frequency light source. Claims are, that in addition to lower power requirements and ease of installation, the system is more effective in influencing bud development, stimulating germination, and rooting cuttings. This trial will provide a comparison of these new lights with the standard high pressure sodium vapour lights which are currently the standard photoperiod light source in the container conifer industry.

Experimental Design

The treatments will receive supplemental photoperiod light to provide a 20 hour daylength. Each treatment will consist of 5 replicates loaded with the standard 3 peat:1 vermiculite media, incorporating 2 kg/m³ 12 mesh and finer dolomite lime, and 0.75 kg/m³ Micromax. All treatments will be double-sown in PSB 313A's.

Fertilization will be according to standard Green Valley Regime with STEM applied throughout the season at 0.5% of the fertilizer weight.

Seedlots

The seedlots to be used are:

Sw 04177 (MRB)  93H11/B3/04177/0.91 - 95% 436 s/g
Fdi 08149 (2030) 82L12/B2/08149/1.13 - 89% 106 s/g
Bl 05107 (EK)  82J11/B3/05107/1.53 - 76% 100 s/g
Treatments

1. Control: Sodium Vapour Photoperiod Extension
   Standard Green Valley Regime
   Grower - 20-20-20 at 100 ppm N
   Finisher - 20-20-20 at 50 ppm N
   Photoperiod supplemented with HPSV light source

2. Nijsen Light Photoperiod Extension
   Standard Green Valley Regime
   Grower - 20-20-20 at 100 ppm N
   Finisher - 20-20-20 at 50 ppm N
   Photoperiod supplemented with LED light source

Evaluation
Frequent observations will be recorded throughout the season with regard to growth and bud formation and ease of dormancy induction after seedlings have reached optimum height. Static samples will be measured during the season and used to generate growth curves. Random samples collected at the time of bud-set and at the end of the year will be processed for morphological comparison. Soil samples will be collected and pH and conductivity will be measured. Frequent observations will be recorded with regard to incidence of disease and general appearance (colour differences, growth). Observations will be made and recorded, during extraction and packaging, regarding numbers culled on the basis of root development or disease. If this light source appears to be effective for photoperiod extension, it will be added as a treatment in this year's trial dealing with rooted cuttings.

Allan McDonald
Saanich Test Nursery

cc Susan Zedel
    Eric van Steenis
    Colleen Wood