To: A.E. McDonald

Re: Sx 86211Q - Mini Plug Transplant Trial

This trial will evaluate the potential of starting crops with fall sown mini plugs. Current January sown spruce crops are not developed fully for July planting. Starting with a fall sown mini plug transplanted to PSB 313A in late January may allow earlier development and hardening off in time for July planting.

The second potential is the replacement of current 2-0 compound crops with a greenhouse compound rotation which would require only one year in the compound. These would be transplanted in winter and moved to compounds as weather conditions permit, being completed prior to the greenhouse being required for other crops in February or March. Because of the high percentage cavity fill and the specialization of this rotation for the production of large stock, the minimum cavity size would be PSB 313, but preferably PSB 415B.

Fall sown mini plugs for both potential rotations would be allowed to achieve bud set and be subjected to near freezing temperatures in December and January. This procedure will likely enhance the development of root collar diameter, a quality deficient in current January sown crops proposed to replace 2-0 rotations.

The seedlot to be used is SW 4177; SZ 3110; 93H11/83/4177/.914 – 89%

Experimental Procedure

To save time, seed should be sown uncovered and exposed to light. After germination commences, cover seed with the usual sand layer. Apply photoperiod lighting of 19 hours from the time of sowing and maintain day temperatures of 20° C and night temperatures above 13° C at the crop level. Sow 12,000 cavities at one seed per cavity, using both the Castle and Cook mini tray and some of the smallest (1/2") speeding trays. The growing medium should be peat combined with 2 Kg/m³ Green Valley 10 mesh and finer dolomite lime and 130 g/m³ FT3 503 or 600 g/m³ Micromax.

Fertilization should be with a “Grower” formulation at 500 g/1000 l (e.g., Peters 20-7-19). During cloudy conditions, the greenhouse temperature should be reduced to 15° C at crop level.
Depending on growth achieved, lighting will likely be discontinued in early December, allowing seedlings to set bud and achieve hardening.

**Treatment 1**

In late January, transplant 2,500 seedlings into PSB 313A and 2,500 into PSB 313 cavities, keeping records on the time required for manual transplanting. When transplanting is complete, begin photoperiod lighting, raise greenhouse temperature to 20°C, (15°C on cloudy days), and apply at "Grower" fertilizer when required, at 625 g/1000 l. Depending on growth, condition stock into bud set in time to develop sufficient caliper and rooting as would be required for a July shipping date.

**Treatment 2**

At the same time as January transplanting, sow four blocks each of 313's and 313A's. These will be greenhouse grown with the transplants to assess the potential advantage of transplanting mini plugs vs. direct sowing into styroblocks.

**Treatment 3**

When greenhouse transplanting is complete, transplant 2,500 mini plugs into PSB 313 and 2,500 into PSB 415B, using some Speedlings and some Castle and Cook for the 415B's. These will be moved outside when transplanted and frost protected, if necessary. When bud flush is imminent, begin 19 hour photoperiods and apply a "Grower" fertilizer at 625 g/1000 l as required.

**Treatment 4**

When the 313's and 415B's above are transplanted, double sow four blocks each of PSB 313 and 415B. These will be greenhouse started and moved to the compound in early April.

**Observations Required**

In early July, samples from Treatments 1 and 2 will be processed for morphological description. Treatments 3 and 4 will be similarly sampled in October. Results will be compared to current January sown and 2-0 compound crops.

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