

## Growing Instructions for Hardening Tissue Culture Limonium Plantlets

1. The tissue culture labs supply the Limonium plantlets in two manners:  
Plantlets in agar.
2. Bare rooted plantlets after washing off the agar in the lab.

### Hardening

The plantlets are hardened in 'Jiffy' plugs. Other similar products can be used, Should they include a hole big enough to insert the culture's roots into.

The plantlets that come in agar can usually be removed from the medium without remains of agar. If the roots come out together with the agar, the agar should be removed carefully from the roots. While removing the plantlets from the box apply the misting system at a frequency that avoids drying of the foliage and loss of turgor of the plantlets. It is possible that some of the plantlets in the box are attached to one another. These should be separated and put in separate plugs. Each bench should be marked with the tag name of the variety, source of the plantlets and date of removal.

### Temperature

To accelerate growth of the plantlets a minimal temperature of 17 C degrees in the media of the plug should be maintained.

### Duration until obtaining the right plant size appropriate for marketing

6-8 weeks. In the event the development of the plantlets is not so uniform, some of the plantlets require an extra week or two to be ready for sales.

### Irrigation

In the first two-three weeks (the exact time depends on the variety, its size and the season), the plantlets are misted in order to avoid loss of turgor. In general, the misting frequency is once for a period of 8 minutes during the noon hours, and after 10 days once for a period of 15 minutes during the noon hours.

After about two-three weeks misting should be terminated and watered once a day. At this point it is important to water regularly so not to allow drying of the plugs medium (due to the high ratio between the plant's canopy and its root system) and if necessary water twice a day.

It is recommended to water by means of the misting system to have uniform watering of the plants.

### Fertilization

One to two weeks after removing the plantlets, we fertilize a balanced feed of 0.8-1.0 mmohs EC (not including the conductivity of the irrigation water).

The growth of the Limonium plantlets that are not fertilized will be slower.

If necessary, it is possible to inhibit growth of the Limonium plantlets by watering without fertilization in order to adjust supply of plants.

In the picture below the effect of the fertilization is evident on the development of the plants.

The fact that lack of fertilization of the Limonium plantlets detains growth can help in adjusting the time for supplying the plants.

If yellowing of the plants begin it is possible to get the appropriate color by spraying with iron fertilizer.



without fertilizer



without or with fertilizer



without or with fertilizer



with fertilizer

#### Diseases:

##### *Colletotrichum gloeosporioides*

The symptoms appear as typical leaf spots disease. Under high moisture conditions such as in the case of hardening, the damage of this disease could be huge due to the fast spreading of the infection in the plants.



Downy Mildew

Mycelium appears on the underside of the leaf. When highly infected, the leaf's upper side turns yellow. The disease is difficult to detect since the mycelium develops on the underside of the foliage. The only way to identify it is to check the underside of the leaf. Only when the disease is very progressed it is evident on the upper side of the leaf as it begins to get yellow.



#### Prevention of diseases

The colletotrichum and downy mildew diseases develop under high humidity conditions. Hence it is essential to reduce humidity above the plants much as possible and the following steps must be taken:

1. Regular check ups for detecting the diseases' first symptoms.
2. Operating the heating system to avoid condensation of water on foliage as much as possible.
3. Spraying with pesticides/fungicides – see below.
4. Spacing out plants – the closer the plants are to each other, the more the dampness on the foliage. When foliage of the plants is close it begins to cover each other and then it is necessary to space out the plants.

The Pesticides/Fungicides we use during the hardening stage:

Disease	Active Ingredient
<i>Downy mildew</i>	PROPAMOCARB HCL
	METALAXYL-M
	MANCOZEB + DIMETHOMORPH
	FOSETHYL AL
	AZOXYSTROBIN
<i>Colletotrichum</i>	PROCHLORAZ MANGANESE
	AZOXYSTROBIN

WE HOPE YOU FIND THIS INFORMATION HELPFUL.  
 THE CULTURAL INSTRUCTIONS PRESENTED HERE, SHOULD BE REGARDED AS  
 GENERAL GUIDELINES.  
 IT IS ADVISED TO MAKE NECESSARY ADJUSTMENTS WHEN GROWING IN DIFFERENT  
 CLIMATIC CONDITIONS AND AGRICULTURAL PRACTICES.  
 DANZIGER DAN FLOWER FARM IS NOT RESPONSIBLE FOR ANY DAMAGE CAUSED BY  
 IMPLEMENTATION OF THE RECOMMENDATIONS.