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### Introduction:

Stock (*Matthiola incana*) is a popular cool season cut flower known for its fragrant showy flower spikes in a variety of colors. Stock is often harvested with a portion of its root system still attached and can be prone to wilting as well as challenging to hydrate. For this reason, some growers will ship these flowers in a transport solution. Stock is also ethylene sensitive.

We wanted to investigate the effects of wet versus dry shipping methods and with or without EthylBloc™ treatment on consumer vase-life following simulated wholesale storage and exposure to ethylene gas.

### Methods:

Three varieties of stock were harvested and placed into FloraLife® HydraFlor® by a California grower. Bunches were divided into the following shipping treatments:

1. Procona (wet)
2. Procona (wet) + EthylBloc™
3. Box (dry)
4. Box (dry) + EthylBloc™

Each shipping treatment included either a procona or a box. For wet shipping, stems were processed into proconas filled with FloraLife® 200 and capped with a cardboard sleeve. For dry shipping, stems were placed horizontally in a vented cardboard shipping box. Each procona held 4 bunches (40 stems) each of 3 different varieties for a total of 12 bunches (120 stems). Each box held 3 bunches (30 stems) each of 3 different varieties for a total of 9 bunches (90 stems). All boxes were stored overnight in the farm cooler at 2C (36F) until shipment.

#### *EthylBloc™ (EB) Treatment*

For wet shipment, two 2.5-gram EB sachets were attached to the cardboard sleeve – tops of procona sleeves were covered with a sheet of plastic and stored in the cooler overnight. For dry shipment, one 2.5-gram EB sachet was placed at each end of the shipping box and stored in the cooler overnight.

#### *Shipping*

The two proconas and 2 boxes were shipped via refrigerated truck to Canton Wholesale (North Canton, OH, USA). Flowers were then delivered to the Smithers-Oasis post-harvest testing lab (Kent, OH, USA) for evaluation.

#### *Simulated Wholesale Holding Treatment*

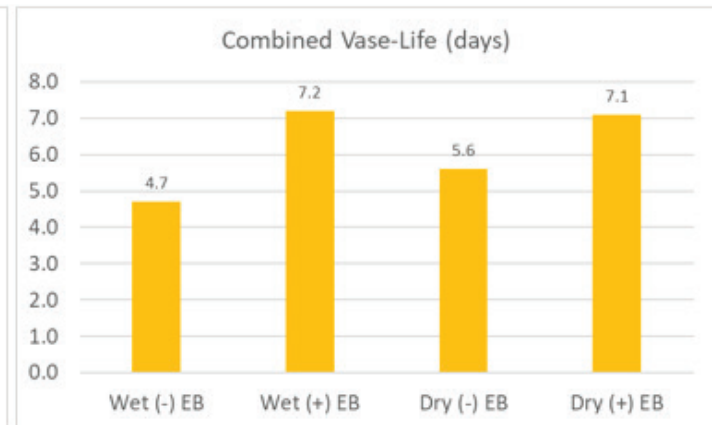
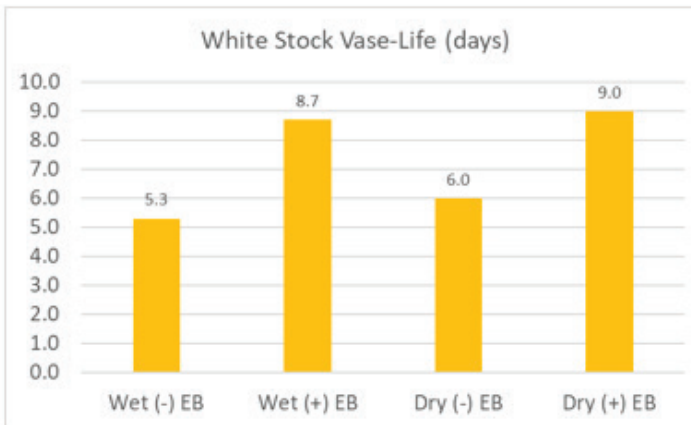
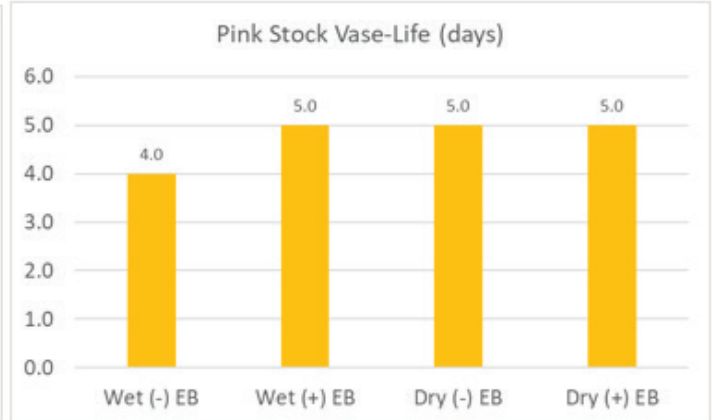
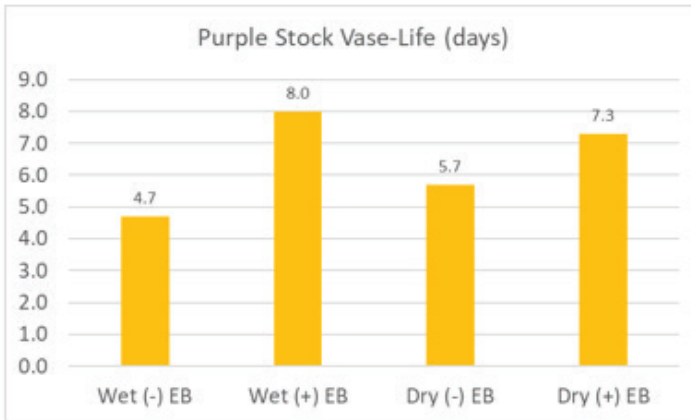
Upon arrival to the Smithers-Oasis post-harvest lab, stems from each treatment were divided into separate buckets containing FloraLife® 200 and were held in the flower cooler at 2-3C (36-37F) for 7 days.

#### *Ethylene Exposure*

Following simulated wholesale holding treatment, three stems of each variety from each treatment were processed into vases of FloraLife Crystal Clear®, placed into a plexiglass chamber and exposed to 2 ppm ethylene gas for 18 hours at room temperature at 21C (70F). Following ethylene exposure all vases were placed on a bench in the post-harvest lab for consumer vase-life evaluation at 21C (70F) with 12 hours fluorescent light.



**Results:**



**Conclusions:**

EthylBloc™ sachets applied prior to wet or dry shipping, followed by 7 days of simulated wholesale holding treatment, increased vase life in the purple and white stock varieties following 2 ppm ethylene exposure for 18 hours. No significant treatment effects were observed in the pink variety which showed poor vase-life in all treatments. Wet shipped flowers not treated with EthylBloc™ showed reduced vase-life compared to dry shipped flowers not treated with EthylBloc™ in this test, suggesting that dry shipped flowers may be more resistant to ethylene damage. Data indicates that EthylBloc™ treatment applied at the farm protected the flowers from ethylene damage after an extended wholesale storage period.



**Photos: Consumer Vase-Life Day 4**



Wet Ship, (-) EB Left, (+) EB Right



Dry Ship, (-) EB Left, (+) EB Right

**Photos: Consumer Vase-Life Day 8**



Wet Ship, (-) EB Left, (+) EB Right



Dry Ship, (-) EB Left, (+) EB Right