

Dümmen Orange® Basewell™ Trial at Midwest Groundcovers LLC

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INTRODUCTION

Unrooted cuttings can be very difficult to root for many species of plants. They require time, space, and controlled environments for successful propagation. A new solution to propagation is known as Basewell™. Developed by Dümmen Orange®, Basewell™ products are bare-root cuttings with advanced root development that can be stuck directly in their final containers, eliminating the step of propagation. Cuttings arrive with a small root system and a cartridge at the base to give the cuttings good posture and a head start when transplanting. Some major benefits to Basewell™ include a more simplified process to propagation, space optimization by sticking in final containers, and reduction in labor costs. Basewell™ products are adaptable to automation and they offer a wide range of annuals and perennials to diversify production planning and maximize production turns (Dümmen Orange). Production of Basewell™ products is very simple. Bareroot

cuttings are received, plants are stuck in their final containers, and then produced. The objective of the Basewell™ trial was to determine if taxa in 32-cell trays will be ready for transplant after 3 weeks. Furthermore, to determine production time for Basewell™ stuck in trade 1-gal containers.

MATERIALS AND METHODS

The trial consisted of nine taxa: *Leucanthemum maximum* ‘Sweet Daisy Birdy’, *Leucanthemum maximum* ‘Snow Cap’, *Salvia nemorosa* ‘Spring King’, *Coreopsis × hybrida* ‘Little Bang Enchanted Eve’, *Coreopsis verticillata* ‘Moonbeam’, *Coreopsis verticillata* ‘Zagreb’, *Phlox paniculata* ‘Flame Pro Violet Charme’, *Phlox stolonifera* ‘Sweet Seduction Blue’, and *Sedum reflexum* ‘Angelina’, all of which were free samples. Each taxon was split between two container sizes (32-cell tray and trade 1-gal container) and two soil mediums

(Flat and Pack mix and Nursery soil mix). Flat and Pack mix consists of 50%–60% peat moss, 25%–35% pine bark, and perlite. Nursery mix consists of 70% pine bark, 20% peat moss, and 10% compost. Cuttings were provided shade and misted three times for the first day, and two times for the 2nd and 3rd day. Three samples from each container size were chosen to represent the total population of each taxon. For the first 3 weeks, pictures were taken at the end of each week to get a visual representation of root development. After 3 weeks, taxa in 32-cell trays were evaluated for transplant based on root development in soil media. Basewell™ plants were pruned back July 16th (Week 3) and August 15th (Week 6) to increase branching. August 23rd, plants in 32-cell trays were transplanted to trade 1-gal containers and grown next to Basewell™ plants stuck initially in their final containers. Production time for Basewell™ initially stuck in their final container was concluded September 13th (ten weeks). Production time for transplanted Basewell™ was concluded September 28th (12 weeks).

RESULTS AND DISCUSSION

Trade 1-Gallon Containers with Nursery Mix

Trade 1-gal containers with nursery mix were stuck with nine different Basewell™ taxa June 28th, 2019. Plants were watered, labeled, and spaced pot to pot. Misting applications were applied with one pass by an overhead boom. Mist was applied to cuttings for a period of 3 days along with an overhead shade curtain to provide plants with a better environment for rooting. After 1 week, most plants from each taxon were upright and establishing in their containers. *Leucanthemum* ‘Sweet Daisy Birdy’ showed some signs of leaf curl after 1 week, but plants recovered quickly, and no losses were recorded for the cultivar throughout the trial.

After 2 weeks of production, the only taxa with losses were *Salvia* ‘Spring King’ with one loss and *Sedum* ‘Angelina’ with five losses. Losses to sedum were likely due to water management rather than quality issues with the Basewell™ cuttings. Nevertheless, no other losses were recorded after the 2nd week for each taxon.

By the end of the 3rd week, most taxa had shown vigorous root development to the base of the container (Fig. 1).



Figure 1. Root development to the base of the container after 19 days.

Phlox ‘Pro Flame Violet Charme’ and ‘Sweet Seduction Blue’ had slower root development with roots extending half way down the container. The only taxon to not show any root development was *Sedum* ‘Angelina’. Pictures of samples from *Salvia* ‘Spring King’ after eleven days showed branching roots extending throughout the container. Root development was a major focus for the first 3 weeks to compare progress of Basewell™ stuck in their final containers with Basewell™ stuck in 32-cell trays. A major benefit to Basewell™ is the potential to eliminate the step of propagation. It was very clear after 3 weeks that all Basewell™ taxa, with the exception of *Sedum* ‘Angelina’, established very quickly in trade 1-gal containers with nursery mix.

Total production time for trade 1-gal containers with nursery mix was determined

to be 10 weeks for each taxon (Fig. 2). The conclusion was made after the populations of *Leucanthemum* ‘Sweet Daisy Birdy’, *Salvia* ‘Spring King’, *Coreopsis* ‘Little Bang Enchanted Eve’, *Coreopsis* ‘Moonbeam’, *Coreopsis* ‘Zagreb’, and *Phlox* ‘Pro Flame Violet Charme’ were observed in full bloom, and taxa had grown throughout their entire containers. Taxa that were not in full bloom after 10 weeks were *Leucanthemum* ‘Snow Cap’, *Phlox* ‘Sweet Seduction Blue’, and *Sedum* ‘Angelina’. These taxa had strong vegetative growth throughout 10 weeks, but did not send out flower buds. It is likely that time of planting, lighting, and short period of growth may have limited flower production for those taxa.



Figure 2. Growth of trade 1-gal containers with nursery mix after 10 weeks for nine taxa

Trade 1-Gallon Containers with Flat and Pack Mix

Trade 1-gal containers in Flat and Pack mix showed very similar results to trade 1-gal containers in nursery mix. For 3 days, taxa were misted and provided supplemental shading. After 1 week, taxa were upright and establishing in their containers.

After 2 weeks, losses were recorded for the following taxa: *Leucanthemum* 'Snow Cap' with one loss, *Salvia* 'Spring King' with two losses, *Coreopsis* 'Little Bang Enchanted

Eve' with one loss, and *Sedum* 'Angelina' with four losses. More losses were noted in flat and pack mix compared to nursery mix, but no significant difference.

Pictures were taken Week 3 to highlight the development of root system. All taxa except for *Phlox* 'Sweet Seduction Blue' and *Sedum* 'Angelina' had branching roots stretching the entire pot. Root development in Flat and Pack mix after 19 days had no visual difference compared to nursery mix soil (Fig. 3).

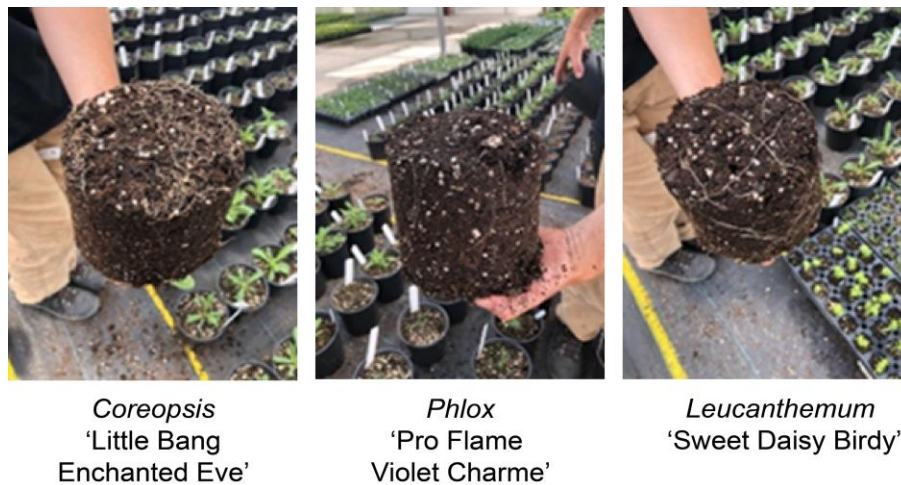


Figure 3. Root development in flat and pack mix after 19 days.

Basewell™ grown in flat and pack mix were produced the same as Basewell™ grown in Nursery mix, though pictures and notes were not taken to determine total production time because we do not grow the selected taxa in flat and pack mix. Instead, we typically use nursery mix to produce perennials in 1-gal containers or larger, and flat and pack mix for containers smaller than 1-gal containers.

32-Cell Trays with Nursery Mix

Basewell™ stuck in 32-cell trays with nursery mix responded well to shade and misting applications for the first 3 days.

Plants were upright in their trays and cartridges were firm in soil indicating good root development (Fig. 4).

Losses from the 2nd week were as follows: *Coreopsis* 'Moonbeam' with one loss, *Sedum* 'Angelina' with three losses, *Leucanthemum* 'Snow Cap' with two losses, and *Leucanthemum* 'Sweet Daisy Birdy' with one loss. Losses from each taxon were likely due to cultural practices such as overwatering or not enough mist rather than quality of Basewell™. No additional losses took place after the 2nd week. Root notes were also taken the 2nd week. Samples from *Salvia* 'Spring King' had the most vigorous roots after just 11 days of growing. Samples from *Leucanthemum* 'Snow Cap' and *Phlox* 'Pro

Flame Violet Charme' had rooted to the bottom of the cell with strong roots holding the soil. *Sedum* 'Angelina' had the slowest root development of all taxa in 32-cell tray. Too much water may have slowed root development leading to weaker roots with *Sedum*

'Angelina'. Overall, Basewell™ taxa showed tremendous vigor in nursery mix after eleven days of growing.

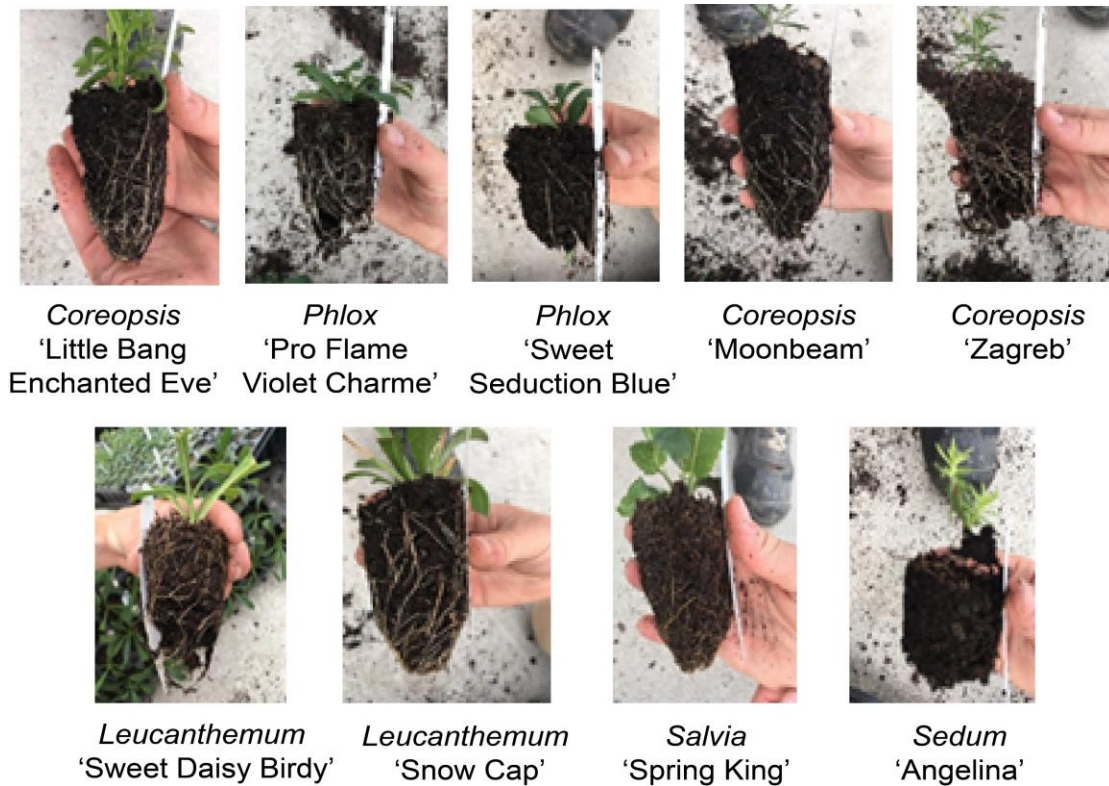


Figure 4. Basewell™ cuttings stuck in 32-cell trays with nursery mix after 19 days.

Pictures were taken after the 3rd week to determine if Basewell™ taxa in 32-cell trays were ready or not for transplant into final containers. All Basewell™ taxa except *Sedum* 'Angelina' were fully established in cell with roots stretching to the bottom of the cell after 2 to 3 weeks.

Basewell™ continued to grow in 32-cell trays up to the beginning of Week 8 when they were transplanted to trade 1-gal containers. This is a limitation to determining production time of Basewell™ stuck in 32-cell first and then transplanting to final container

because plants were not transplanted immediately after they were ready for transplant. On that note, Basewell™ products allow producers to stick directly into final containers eliminating the step of transplanting. The importance of determining time to transplant was to compare it with root development of plants stuck in their final containers. Basewell™ taxa stuck in trade 1-gal containers had a 2- to 3-week advantage over taxa stuck in 32-cell trays with respect to time establishing in final containers. This 2 to 3-week advantage provided Basewell™ in trade 1-gal containers a more developed root

system than plants in 32-cell trays to feed the plant above the soil line. The trial concluded for transplanted Basewell™ September 28th. Transplanted Basewell™ had grown for four weeks reaching similar width and height of Basewell™ stuck initially in trade 1-gal containers.

32-Cell Trays with Flat and Pack Mix

Basewell™ in 32-cell trays with Flat and Pack mix responded well to shade and misting application after 3 days. Results from Flat and Pack in comparison to plants in nursery mix showed no visible difference. After 1 week, plants were upright and establishing.

After 2 weeks, the only taxon to have losses was *Sedum* ‘Angelina’ with four losses. Losses were likely contributed to cultural practices such as overwatering rather than quality of Basewell™. Both *Leucanthemum* and *Phlox* taxa had strong roots holding the soil. Soil was very loose with *Coreopsis* taxa, though roots were still vigorous. *Salvia* ‘Spring King’ had the fastest growing roots of all taxa, but roots did not hold the soil as well as in nursery mix. Samples from *Sedum* ‘Angelina’ showed roots extending a quarter of the depth of cell.

Basewell™ taxa were evaluated the 3rd week to determine if taxa were ready for transplant. Taxa in Flat and Pack mix showed similar results to taxa in nursery mix. *Phlox* ‘Flame Pro Violet Charme’ and ‘Sweet Seduction Blue’ showed stronger root development compared to phlox in nursery mix (Fig. 5). Samples held the soil better and stretched the entire length of cell.

The 32-cell trays in Flat and Pack mix were transplanted the beginning of week eight into trade one-gallon containers with nursery mix. The same limitation applies to Flat and Pack mix as nursery mix. The trial finished September 28th after plants had grown for 4 weeks and reached similar height and width to Basewell™ stuck initially in trade 1-gal containers.



Phlox
‘Pro Flame
Violet Charme’

Phlox
‘Sweet
Seduction Blue’

Figure 5. *Phlox* ‘Flame Pro Violet Charme’ and ‘Sweet Seduction Blue’ showed stronger root development in Flat and Pack mix.

CONCLUSION

Basewell™ taxa showed tremendous potential to establish and mature quickly in trade 1-gal containers with nursery mix.

Salvia ‘Spring King’ had branching roots extending to the bottom of trade 1-gal containers after 11 days. *Leucanthemum* and *Coreopsis* taxa had roots extending to the bottom of the container after 19 days. *Phlox* taxa were not as vigorous after 19 days with roots half way down the side of the container. Overwatering may have slowed down root development for *Phlox* taxa. *Sedum* ‘Angelina’ had the slowest root development in trade 1-gal containers with nursery mix. Factors such as overwatering and container size may have limited growth and development. Samples of *Salvia* ‘Spring King’, *Coreopsis* ‘Little Bang Enchanted Eve’, and *Phlox* ‘Pro Flame Violet Charme’ in 32-cell trays with nursery mix had beautiful established roots ready for transplant after 11 days. All taxa except *Sedum* ‘Angelina’ were ready for transplant after 2 to 3 weeks.

To conclude, Basewell™ taxa were consistent in size, flowering, and all but *Sedum* ‘Angelina’ maintained losses at 6% or less. In relation to our typical production time for select taxa, Basewell™ taxa took on average 2–3 weeks more time. However, better management of certain factors such as time of planting, water and fertility management, plant growth regulation, and standards for

saleable products are potential ways to decrease production time and increase turnover. The Dümme Orange® Basewell™ trial demonstrated that Basewell™ is very simple, cuttings can be directly stuck in final container with almost no losses, and it has the potential to save nurseries space, labor, and production steps.

Literature Cited

Dümme Orange. 2019. A groundbreaking rooting technology. Grow Basewell www.growbasewell.com/site/en