

The Benefits-Costs of Grading Liners Before Production

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Nature of Work.

As liners, seedlings, or transplants are potted (or repotted) by a nursery for container production, the plants are often of a mixed “quality” or grade upon arrival. Employees typically pot the liners into gallon containers, for instance, regardless of condition—including the “dead on arrival”—on a piece-rate pay basis for the larger container nurseries. Because of the block potting, no differentiation of plants occurs until marketing, at which time an average price for the container plants is used. This disregards any quality differentials that either may have developed during the growing and finishing timeframes or were recognizable upon arrival at the potting shed which would have encouraged differential pricing strategies. Is there any revenue (and/or profit) enhancement from grading liners prior to production and subsequent marketing?

Juniper liners, from six flats, were sorted by size and condition into four categories: large, medium, small, and dead/empty cells. The gradients on height were: 6cm < medium < 10cm, and breadth gradients were: 6cm < medium < 9cm. Of the 376 total cells evaluated, 333 liners were potted into one-gallon green plastic containers with a 6-bark::1-sand mix. Of those liners potted, 30.0% were classified as large, 51.4% as medium, and 18.6% as small. Upon potting in March 1999, the containers were set in pot-to-pot formation for growing, maintaining the large-medium-small identity established by the initial grading. Standard production practices (irrigation, pruning 4" above the pot and at the pot edge on July 1, and necessary pest and disease control) were maintained during the summer months 1999.

Size	A	B	Flats				Sum	% of 376		% of 333
			C	D	E	F		Total	Potted	
Large	12	35	15	29	1	8	100	26.6		30.0
Medium	35	19	31	25	30	31	171	45.5		51.4
Small	9	4	14	3	29	3	62	16.5		18.6
Dead/Empty	8	6	4	7	4	14	43	11.4		N/A
Total	64	64	64	64	64	56	376	100.0		100.0

The liners were re-evaluated in December 1999. Size measurements (height and breadth) were obtained for a sample of 20 plants from each of the three size categories (large, medium, and small), as well as an overall appearance evaluation (good, average, poor) for each of the plants in the sample. A growth score was tabulated for each plant (height multiplied by breadth) as well as a g.a.p. score (good = 3, average = 2, poor = 1). For the 20 plants in each size category, the average growth score and the average g.a.p. score was tabulated. The medium-size and the

small-size plants had become less differentiated while the large-size plants had discernibly higher average growth scores; g.a.p. scores were consistent across all sizes.

Size Category	N =	For Sample of 20 Plants,	
		Average Growth Score	Average G.A.P. Score
Large	100	425	2.84
Medium	171	250	2.72
Small	62	170	2.56

Managerial and Economic Observations

Several questions come to mind in the analysis. The basic question of “does it pay to sort or grade according to either visual or quantitative criteria?” was answered by merely reflecting on the costs of space, time, media, container, water, fertilizer and sprays applied to dead plants and barren pots over the course of the growing season. This is especially true for the very large container nurseries. This revelation was based on the eleven percent of the original flat cells were dead (or nearly so)—another replication with juniper liners or other plants being potted or repotted might lead to alternative results.

Is there any special training or skills required to grade plants at the initial off-loading of plants to the nursery? Should an incremental wage increase occur to compensate for the skill of grading? How much time was spent (and what labor cost does that translate to)? The answers to these questions hinge on how many different categories and how definitive the sizing or quality grading of each category will be used for said plant. From the experiment on juniper liners, there are diminishing returns to grading or sorting beyond three broad categories of the best, the dead, and those remaining. Conversations with retailers suggest that there is a differentiable market for the best (or largest) plants versus the balance of an order or shipment, and that about 30% or one-third of a normal shipment could be appropriately sorted and marketed as “superior” or “premium” plants—this observations verifies the initial sorting of 30% into a large-size category.

If space allocation for the various categories of plants into blocks for continual monitoring, growing and finishing in preparation for marketing is limited (an opportunity cost for space and the additional management to monitor), then another negative or non-benefit of grading should be acknowledged.

Is there revenue enhancement to the nursery for using specific unit pricing (or variable rate pricing), versus the average revenue approach without the grading activity? An average price strategy offers all plants, regardless of size or quality, at a common price, thereby “giving away” the incremental quality associated with the best plants. The answer lies in the price differential between the various groups, as cost differentials are virtually nil as the same labor hours and rates and inputs (rates of application and costs of materials) are used to grow the various categories.

Does the marketplace warrant or demand quality (and price) differentiation? For grower-wholesalers marketing to retailers, the answer becomes one of changing tradition—retailers are used to paying a single rate or price for the block of plants, which they may then re-grade at the garden center or nursery and price according to what consumers and the market will bear (knowing that the price can always be lowered later to sell the slow movers). Paying a higher price for perceived value to the grower lowers the retailer's margin for the plants sold.

Significance to Industry.

Regardless of the wholesale nursery capacity, initial screening or grading of liners, seedlings or transplants to eliminate the possibility of coddling or maintaining non-productive and unmarketable plants reaps monetary rewards in cost savings for labor, equipment, materials, space and time. Beyond that point, further grading or regrading may become a mute point, depending upon the market situation and the numbers and plant varieties involved.

The junipers in this research are being maintained or overwintered until a further review of plant size and condition and quality can be completed in late February. These plants will then reflect the marketable product being sold by grower-wholesalers to retailers for spring sales.