

SELECTING THE BEST SHADE LEVELS FOR VARIEGATED PLANT PRODUCTION

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Variiegated plants are an important segment of the ornamental industry; typically 25% to 30% of plants produced by commercial growers in a given geographic region will be variegated. As consumer demand for more attractive and higher quality plants escalates, growers need to use optimal production practices to remain competitive in today's marketplace. During the past 25 years, grower and university research has

determined the best cultural practices for many commonly grown ornamental plant species. However, only limited research has been conducted that critically evaluates the response of variegated plants to light levels. A common and incorrect maxim concerning selection of optimal light levels for production of variegated plants is to "Use the highest light level you can without discoloring the leaves". This statement or something similar is heard all too frequently both in the halls of academia and in trade shows.

We found some very interesting and useful facts about the response of variegated plants to light levels when using several shade levels and two different variegated monocots. The two plants used in the study were *Dracaena sanderiana* (Ribbon Plant) and *Liriope muscari* 'Variegated Giant' (Aztec Grass). Ribbon plant has linear-lanceolate leaves with prominent marginal creamy-white bands and is commonly used as a focal point in dish gardens, a solitary interior-landscape element and a clump-forming perennial in frost-free areas. Aztec grass has long linear grass-like leaves with multiple white and green bands on the leaf and is an evergreen perennial commonly used in borders or as focal point in perennial gardens from Zone 6 southward. As both plants are periclinal chimeras with comparable leaf variegation patterns, their response to different shade levels might be expected to be similar. This is not what

occurred. As shade levels increased from 47% to 80%, leaf length and width of Ribbon Plant increased (Table 1 and Figure.1). Longest and widest leaves developed on plants grown under 80% shade. Leaves of plants grown under 91% shade were slightly shorter and narrower than leaves of plants grown under 80% shade. The largest leaves developed on plants grown in 80% shade, however leaves of plants grown in 91% shade had larger white marginal bands and had the largest percentage of variegated leaf surface.

Leaf width and length of Aztec Grass also increased as shade levels increased from 30% to 80% and then decreased under 96% shade (Table 2 and Figure 2 on page 14). However, leaf variegation showed an entirely different response as leaves of plants grown under 30% shade had the greatest amount of variegation. As shade levels increased, the amount of leaf variegation tended to decrease, reaching its lowest value in plants grown in 96% shade. Although increasing shade levels affected leaf length and width of both plant species similarly, overall plant growth was markedly different for both plants. Ribbon Plant is a shade-requiring plant and high quality plants can be produced under 90% shade. Aztec Grass tolerates full sun sites and plants grew optimally under 30% shade and declined in quality as shade levels increased. Plants under 96% shade had fewer growing points and leaves than plants grown under 30% or 50 % shade.

The take-home message of this research is that optimal production light levels are species dependent and probably cultivar dependent. Growers should select shade levels that will produce optimal leaf size and variegation after evaluating plant performance under several different shade levels. Then they will be assured of producing the highest quality plants with the greatest customer appeal and market value.

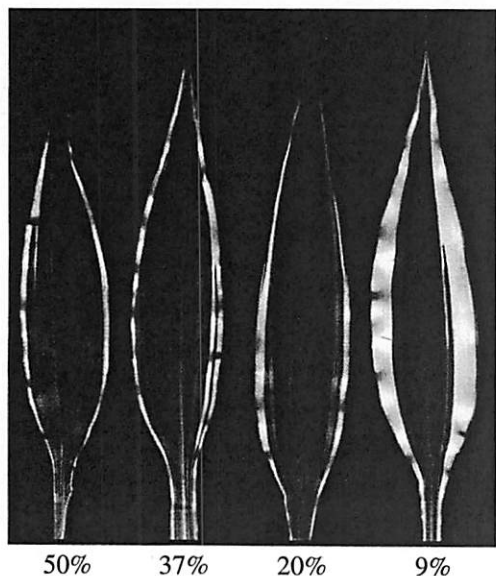


FIGURE 1.
D. sanderiana

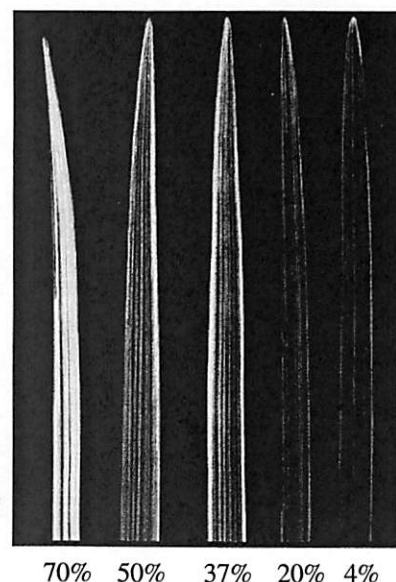


FIGURE 2.
L. muscari

Table 1. Leaf morphology of *D. sandariana* grown under four light levels (per cent of full sun).

Response	Light Level			
	53% (5300 ft-c)	37% (3700 ft-c)	20% (2000 ft-c)	9% (900 ft-c)
Leaf length (cm)	16.5	14.2	19.9	18.4
Leaf width (cm)	2.8	2.8	3.2	2.9
Total leaf area (cm ²)	40.5	40.4	51.6	41.1
Variegated leaf area (cm ²)	9.8	8.4	13.5	14.0
Variegated leaf area as % of total leaf area	25.1	21.0	26.4	35.2

Table 2. Leaf morphology of *L. muscari* grown under five light levels (per cent of full sun).

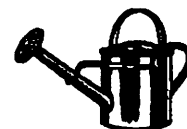
Response	Light Level				
	70% (7000 ft-c)	50% (5000 ft-c)	37% (3700 ft-c)	20% (2000 ft-c)	4% (400 ft-c)
Leaf length (cm)	34.5	34.3	38.5	39.6	41.9
Leaf width (cm)	0.81	0.87	0.92	0.9	0.86
Total leaf area (cm ²)	21.3	22.6	26.1	26.9	26.1
Variegated leaf area (cm ²)	2.86	2.38	2.28	2.37	2.18
Variegated leaf area as % of total leaf area	13.57	11.21	8.77	9.09	8.53

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