

Ornamental Groundcover Characteristics of Rhizoma Peanut (*Arachis glabrata* Benth.): Shade Affects Height but not Cover

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Abstract. Rhizoma peanut has the potential for use as an ecologically friendly groundcover or turf alternative. Little is known about height and cover characteristics of this plant, which are important ornamental considerations. The objectives of this field study were to characterize maximum average canopy height, height variability, the time to reach full canopy cover, and the time at full canopy cover of seven released and nine experimental selections of rhizoma peanut grown in full sun or under 30% shade at two North Florida locations. Greater height and a less uniform canopy were observed for shaded plants. Establishment, as measured by full canopy cover, did not occur until the second year after planting. Shade treatment had little effect on the time to reach full canopy cover or the duration of full canopy cover, indicating that rhizoma peanut will perform equally in full sun or under 30% shade. Recommended selections for ornamental use based on these variables include ‘Brooksville 67’, ‘Brooksville 68’, EX3, and EX8.

Rhizoma peanut (*Arachis glabrata* Benth.) is a leguminous, herbaceous, dinitrogen-fixing, warm-season perennial native to South America. It has been used almost exclusively as a forage crop in the United States since the 1930s. While hard frosts kill aboveground foliage, rhizoma peanut is grown in U.S. Department of Agriculture hardiness zones 8b and greater of peninsular Florida and the U.S. Southern Coastal Plain where it is best adapted to coarse, sandy soils (Ocumpaugh, 1990; Prine et al., 1990; Terrill et al., 1996). However, its utility as an ornamental groundcover has not been realized. Extensive soil colonization by its rhizomes, which can account

for up to 85% of the plant’s biomass (Williams, 1994), make it drought-tolerant and persistent once established (Ortega-S. et al., 1992; Prine et al., 1990). Additionally, it is pest and disease resistant (Baltensperger et al., 1986; Quesenberry et al., 2010), fixes nitrogen to support its growth (Venuto et al., 1998), produces abundant flowers, and has high aesthetic value as an ornamental groundcover (Prine et al., 2010) (Fig. 1). Rhizoma peanut has the potential to be used in diverse situations, including roadside and right-of-way plantings, and as an ornamental or utility turf, including areas where mowing is difficult, such as sloped or uneven terrain.

Previous research on rhizoma peanut has focused almost entirely on the forage cultivar Florigrade. Cultivars Arbrook (Butler et al., 2006), UF Peace, and UF Tito were subsequently released as superior forages based on yield and drought tolerance (Quesenberry et al., 2010). In contrast, lower growing forms of rhizoma peanut have received little attention for their potential use as an ornamental groundcover. Compared with forage cultivars, ‘Ecoturf’, ‘Brooksville 67’, and ‘Brooksville 68’ maintain lower canopies and show promise as

ornamental groundcovers or turf alternatives. During drought conditions, ‘Ecoturf’ outperformed St. Augustinegrass (*Stenotaphrum secundatum* Kuntze), as measured by leaf color and visual appearance (Prine et al., 2010).

Generally, rhizoma peanut does not achieve full cover for at least 2 years (Adjei and Prine, 1976; Williams et al., 1997), necessitating the need for selections that provide faster cover, a characteristic of great ornamental importance. Successful cultivation of rhizoma peanut in a shaded environment allows for greater planting options. In one of only a few studies addressing rhizoma peanut shade tolerance, ‘Florigrade’, grown under 54% photosynthetic photon flux density (PPFD), persisted comparably to that grown under full sun (Johnson et al., 1994). However, no selections have been evaluated for ornamental attributes in full sun vs. shaded environments.

Environmental conditions may play less of a role in establishment of rhizoma peanut than planting material genetics (Williams, 1993). Furthermore, selections overlooked in forage evaluations may have desirable ornamental characteristics. Water resource scarcity, as a result of population needs and the overuse of chemical fertilizers have dictated the need for more environment-friendly groundcovers. Rhizoma peanut has the potential to fill this need; however, ornamentally important characteristics have not been studied among cultivars (Prine et al., 2010). In addition, new ornamental cultivars will expand commercially available germplasm diversity.

The objectives of this study were to characterize the rate and duration of full canopy cover, as well as height attributes of previously released and new selections of rhizoma peanut, in full sun and under shade. Height attributes included maximum average canopy height and canopy uniformity, which were used for selecting low-growing selections with minimal canopy height variability. These characteristics were used to propose selections for ornamental use.

Materials and Methods

Field locations. Plots were located at the North Florida Research and Education Center, Quincy, FL on Norfolk loamy fine sand (fine-loamy, kaolinitic, thermic Typic Kandiudults) and at the Agronomy Forage Research Unit, Gainesville, FL on Chipley sand (thermic, coated Aquic Quartzipsamments) (Table 1). The Quincy field was sheet fumigated with methyl bromide (448 kg·ha⁻¹) before planting to assist weed management, but no preplant weed control was necessary at Gainesville. Weeds in plots and alleys were controlled by hand weeding and herbicides: glyphosate (1.12 L a.i./ha; Chemical Products Technologies, LLC, Cartersville, GA), imazapic (70.6 g a.i./ha; Makhteshim Agan of North America, Inc., Raleigh, NC), and clethodim (0.15 L a.i./ha; Valent U.S.A. Corp., Walnut Creek, CA), with the additional use of 2,4-DB (0.55 L a.i./ha) at Gainesville. No soil amendments or fertilizers were applied at either location. Average monthly air temperatures in

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Quincy and Gainesville range from 11 °C and 12 °C, respectively, in January to 27 °C in July (Your Weather Service, 2015). Near normal temperatures occurred throughout the study except Oct. 2010 through January 2011 and Oct. 2011 when both locations experienced average monthly temperatures more than 1.5 °C below normal (FAWN, 2015). Average total rainfall for the 20 months of the study is 254 cm at Quincy and 208 cm at Gainesville (Your Weather Service, 2015). For Quincy, below normal rainfall occurred in 19 of 20 months resulting in a deficit of 86 cm (FAWN, 2015). Gainesville had below normal rainfall in 14 of 20 months with a total deficit of 45 cm (FAWN, 2015).

Experimental design. Individual plots, each measuring 1.8 m × 3.0 m, were replicated four times in a split-plot design, with selection as the main plot and shade treatment as the sub plot. Whole plots were arranged in a completely randomized block design. Rhizomes from 16 selections (Table 2) were divided and potted into 0.55 and 0.43 L containers, 3 and 5 months before planting in Gainesville and Quincy, respectively. Plots were oriented north-south across the longest dimension and 1.2 m wide alleys separated all plots. Light treatments were full sun and a 30% shade treatment, imposed by erecting onto each plot, a 1.2 m × 1.5 m, five-sided shade structure, supported by four 1.2 m step-in poly posts (2400; Dare Products, Inc., Battle Creek, MI), and covered on all sides with shade cloth (KS30; DeWitt Company, Sikeston, MO). A gap between the shade cloth and the ground of no greater than 0.25 m permitted air movement. Six plants treated with legume inoculant (Nitrogin Type EL; EMD Crop BioScience, Milwaukee, WI) were transplanted into each plot. Irrigation was used for ≈60 d postplanting during dry periods, to ensure survival.

Data collection. Data collection began at both locations on 28 June 2010. Canopy height and cover were determined on a biweekly basis using a 1.0 m² frame, subdivided into a 5 × 5 grid. Percentage of canopy cover was calculated by summing the coverage of all grid squares. Two height measurements were taken within the inner nine squares of the grid, at the top of the canopy of the squares with the greatest and least overall height. As a measure of canopy uniformity, height variability was calculated as the difference between the maximum and minimum heights for each plot. Maximum average height was the greatest average height measurement during each growing season. Number of weeks to achieve full cover (defined as 95% or greater canopy cover) was calculated from the date of emergence. Number of weeks of full cover (cover duration) was determined for each growing season.

Statistical analysis. Data were analyzed using the PROC GLIMMIX procedure of SAS (Version 9.2; SAS Institute Inc., Cary, NC). Locations were analyzed separately due to different planting dates. Cultivar, year after planting, and shade treatment were treated as fixed effects and block was treated



Fig. 1. April appearance of a 1.8 m × 3.0 m plot of *Arachis glabrata* EX1 in Quincy, FL.

Table 1. Field characteristics at both Florida locations. Mehlich-3 extractable macro- and micronutrients are expressed in ppm.

Location	North Florida Quincy	North central Florida Gainesville
Date of planting	July 2009	May 2010
Lat., Long.	30.54, -84.59	29.80, -82.41
pH	5.7	5.7
P (ppm)	110	281
K (ppm)	56	35
Mg (ppm)	109	29
Ca (ppm)	366	404
B (ppm)	0.23	0.25
Zn (ppm)	2.43	2.12
Mn (ppm)	18	3
Fe (ppm)	140	138
Cu (ppm)	0.78	2.83
S (ppm)	12	16
Mo (ppm)	0.32	0.37

Table 2. Released cultivars and experimental selections of rhizoma peanut (*Arachis glabrata* Benth.) used in the study.

Cultivar/line no.	Exp. name/PI ^a	Type
Released		Released description
Arbrook	PI 262817	Forage
Ecoturf	PI 658529	Dual Use
Florigraze	PI 151982	Forage
UF Peace	PI 658214	Forage
UF Tito	PI 262826	Forage
Brooksville 67 (Waxy)	PI 262801	Ornamental
Brooksville 68 (Pointed)	NRCS number 9056068	Ornamental
Experimental		Proposed use ^b
EX1	Apalachee	Ornamental
EX2	Arlo	Forage
EX3	Chico	Ornamental
EX4	Chiquita	Ornamental
EX5	Cowboy	Unknown
EX6	QS 5W	Forage
EX7	QS 6WA	Forage
EX8	QS 6WB	Dual use
EX9	Suwannee	Ornamental

^aPI = Plant Introduction nomenclature given by USDA; Exp. = experimental name of unreleased lines, as of this publication.

^bProposed use was determined from observational data at the North Florida Research and Education Center preceding the study.

as a random effect. To test for differences among selection and treatment means, the Tukey-Kramer adjustment was applied to the LSMEANS statement of SAS at $P \leq 0.05$.

Results

Time to achieve full cover. At Gainesville, there was a significant shade × selection interaction (Table 3). The year effect was

not analyzed since full cover was not reached in year 1. Narrow leaf types ‘Brooksville 68’ and EX5 failed to reach full cover and EX9 did not achieve full cover in shade. Shade did not influence time to achieve full cover, except for EX4 which took longer to reach full cover under shade.

At Quincy, effects of selection and shade × year were significant. ‘Brooksville 67’, EX2, EX6, EX7, and EX8 reached full cover

Table 3. Maximum average height, canopy uniformity (height variability), time to achieve full cover, and duration of full cover of *Arachis glabrata* selections at the Gainesville location.

Selection	Maximum avg ht				Ht variability		Time to achieve full cover		Full cover duration
	Yr 1 ^z		Yr 2		Yr 2		Yr 2		
	Sun	Shade	Sun	Shade	Sun	Shade	Sun	Shade	
	-----cm-----				-----weeks-----				
Released									
‘Arbrook’	24.8 a ^y	22.1 a	34.8 a	36.4 ab	8.5 a B	12.2 a A	23.3 ab	24.0 bcd	5.8 efg
‘Brooksville 67’	8.1 d	8.1 de	17.5 bcde B	25.0 def A	4.2 defg	4.6 def	16.5 bc	17.0 d	25.0 a
‘Brooksville 68’	9.2 d	7.8 de	8.8 ef	10.3 i	2.5 fg B	3.3 f A	— ^x	—	0.0 g
‘Ecoturf’	11.9 bcd	14.6 bc	25.1 abc B	32.1 abcd A	5.6 bcd B	7.9 b A	21.0 abc	22.0 bcd	20.5 abc
‘Florigraze’	15.9 b	17.9 ab	26.3 ab B	30.8 abcd A	5.6 bcd B	6.8 bc A	20.0 abc	22.0 bcd	11.0 def
‘UF Peace’	15.2 bc	17.8 ab	26.3 ab B	34.6 abc A	6.4 bc B	8.0 b A	20.0 abc	18.5 cd	19.8 abcd
‘UF Tito’	14.8 bc	17.9 ab	26.8 ab B	34.1 abc A	6.7 A bc	7.9 b	24.0 ab	25.5 b	4.8 efg
Experimental									
EX1	9.9 cd B ^w	10.4 cde A	18.9 bcd	19.8 fgh	4.0 D efg	4.2 ef	16.0 c	17.5 d	24.3 a
EX2	11.8 bcd	13.3 bcd	29.6 a B	39.3 a A	5.0 bcde B	7.1 bc A	18.5 abc	19.0 cd	14.0 bcde
EX3	7.0 d	7.3 e	11.1 def	13.6 ghi	2.5 fg B	3.2 f A	18.5 abc	19.0 cd	23.3 ab
EX4	8.6 d B	11.8 cde A	16.0 cdef	20.2 fg	4.2 defg B	8.6 b A	26.0 a B	40.0 a A	3.5 fg
EX5	9.9 cd	12.3 bcde	6.8 f	9.2 i	2.2 g B	3.2 ef A	—	—	0.0 g
EX6	8.2 d	9.7 cde	18.1 bcde B	26.2 cdef A	4.4 def B	6.7 bcd A	21.0 abc	21.3 bcd	13.3 cde
EX7	8.2 d	9.9 cde	15.8 cdef	21.5 efg	4.8 cde B	6.7 bcd A	24.5 a	24.0 bc	11.8 cdef
EX8	9.2 d	11.1 cde	26.8 ab	29.4 bcde	6.9 ab A	5.6 cde B	17.0 bc	17.5 d	24.8 a
EX9	9.3 d	9.1 cde	12.7 def	11.3 hi	3.3 efg	3.9 ef	25.3 a	—	3.3 fg

^zYear after planting data represents the number of weeks to attain 95% coverage after the study began on 30 June 2010.^yMeans within columns with the same lowercase letter are not statistically different by the Tukey-Kramer test at $P \leq 0.05$.^xIndicates that full cover was not achieved for a particular selection.^wOnly means within rows for a given year with different uppercase letters are statistically different by the Tukey-Kramer test at $P \leq 0.05$.

significantly faster than EX3, EX4, and forage cultivars Arbrook, Florigrade, and UF Tito (Table 4).

Full cover duration. No selections achieved full cover during the first year of the study at Gainesville, so only second year data are presented (Table 3). Selection was a significant factor, where 'Brooksville 67', 'Ecoturf', 'UF Peace', EX1, EX3, and EX8 maintained full cover longer than most forage types and nearly all other experimental selections. 'Arbrook', 'UF Tito', EX4, and EX9 had a particularly short duration of full cover, while narrow leaf types 'Brooksville 68' and EX5 failed to reach full cover.

Shade \times year and year \times selection were significant interactions at Quincy (Table 4). The shade \times year effect was a result of a shorter evaluation period in the first year of the study. 'Arbrook', 'Florigrade', and 'UF Tito' as well as narrow leaf types 'Brooksville 68' and EX5 either did not reach full cover or had a very short duration of full cover during year 2. EX3 did not reach full cover in year 2 due to its later planting; however, during the following year, its full cover duration was similar to many of the ornamental selections. In year 2, 'Brooksville 67', 'Ecoturf', EX1, EX6, EX7, and EX8 displayed the longest full cover duration. In year 3, the same selections significantly outperformed most forage types and both narrow leaf types.

Maximum average height. At Gainesville, there were significant shade \times year, shade \times selection, and year \times selection interactions; therefore, data are presented by year and by shade treatment (Table 3). Shade \times year was likely significant due to lower heights during year 1 when canopies had not achieved full cover. During year 1, shade resulted in greater canopy height for selections EX1 and EX4. The following year, nearly half of

Table 4. Time to achieve full canopy cover and duration at or above full canopy cover of *Arachis glabrata* selections for the Quincy location.

Cultivar	Time to achieve full cover	Full cover duration	
		Yr 2 ^z	Yr 3
	----- weeks -----		
Released			
Arbrook	18.5 a ^y	0.0 e B ^x	6.8 f A
Brooksville 67	4.8 c	22.8 a B	29.7 a A
Brooksville 68	11.0 abc	0.0 e B	14.8 e A
Ecoturf	6.4 bc	23.0 a	25.5 abc
Florigrade	12.5 ab	0.5 e B	5.8 f A
UF Peace	6.1 bc	15.0 b B	25.5 abc A
UF Tito	12.7 ab	0.3 e B	14.8 e A
Experimental			
EX1	6.4 bc	21.5 a B	27.8 ab A
EX2	4.0 c	6.5 cd B	15.5 e A
EX3 ^w	16.3 a	0.0 e B	22.0 bcd A
EX4	12.0 ab	9.3 c B	20.8 cde A
EX5	7.5 bc	2.5 de B	15.8 e A
EX6	5.3 c	21.3 a B	25.3 abc A
EX7	4.6 c	22.5 a B	26.5 abc A
EX8	4.0 c	22.5 a B	30.0 a A
EX9	5.9 bc	10.8 bc B	18.0 de A

^zYear after planting data represents the number of weeks to attain 95% coverage after the study began on 30 June 2010.^yMeans within columns with the same lowercase letter are not statistically different by the Tukey-Kramer test at $P \leq 0.05$.^xOnly means within rows for a given variable with different uppercase letters are statistically different by the Tukey-Kramer test at $P \leq 0.05$.^wSelection EX3 was planted one year later than the other selections at the Quincy location.

all selections, including most forage types, were taller in shade. Regardless of shade treatment, all released forage types in year 2 were significantly taller than selections EX3, EX4, EX7, EX9, and narrow leaf types 'Brooksville 68' and EX5.

At the Quincy location (Table 5) there was a significant shade \times year \times cultivar interaction. Shade did not result in selections that were consistently shorter across both years. Compared with released forage types, 'Brooksville 68', EX4, and EX9 were significantly shorter in full sun during both years.

Selection EX3 results for canopy height are less relevant, as it was not planted until year 2 at Quincy.

Generally, the new experimental lines had similar canopy heights to ornamental types that are commercially available. A majority of selections at Gainesville were significantly taller in year 2 (inferred in Table 3 but data not shown). A similar trend occurred at Quincy where 'Arbrook', 'Florigrade', EX7, EX9, and narrow leaf types 'Brooksville 68' and EX5 were significantly taller in year 3, regardless of light treatment

Table 5. Maximum average height and canopy uniformity (height variability) of *Arachis glabrata* selections in sun and shade at the Quincy location.

Cultivar	Maximum avg ht				Ht variability			
	Yr 2 ^a		Yr 3		Yr 2 ^a		Yr 3	
	Sun	Shade	Sun	Shade	Sun	Shade	Sun	Shade
Released					cm			
Arbrook	26.6 abcd ^b	31.9 bcde	44.4 a	42.3 a	11.5 a	13.4 a	10.8 a B	13.7 a A
Brooksville 67	20.2 ghi	27.9 def	30.8 cdef	31.5 def	5.1 efg B	7.9 cd A	6.4 bcdefg	6.2 defg
Brooksville 68	13.8 ij	18.4 g	29.1 ef	32.3 cdef	5.0 f B	7.7 cd A	4.9 fg B	7.0 cdefg A
Ecoturf	31.8 bcde	33.7 abcde	35.2 bcde	36.7 bcd	6.5 def B	8.1 cd A	7.4 bcd	7.9 bcd
Florigrade	29.2 def	28.5 def	37.6 bcd	35.8 bcd	7.9 bcde B	10.4 abc A	6.3 cdefg B	8.0 bcd A
UF Peace	37.8 abc	37.4 ab	41.4 ab	38.7 ab	9.8 abc B	12.9 ab A	7.8 bc	8.5 bc
UF Tito	38.9 ab	36.3 abc	38.0 abc	39.9 ab	10.3 ab	10.8 abc	8.3 b B	9.9 b A
Experimental								
EX1	22.3 fgh	26.9 ef	32.5 cdef	27.9 f	6.2 ef	5.9 d	6.5 cdef A	5.2 g B
EX2	43.6 a	40.4 a	40.7 ab	37.4 abc	9.2 abcd	9.4 c	7.1 bcde	8.0 bcd
EX3 ^a	9.5 j	8.9 h	16.8 g B	20.3 g A	2.1 g	2.3 e	4.8 g	5.4 fg
EX4	19.3 hi B ^w	27.8 def A	27.3 f	30.1 ef	6.9 cdef	8.1 cd	5.5 efg	5.9 efg
EX5	22.6 fgh	22.6 fg	31.1 def	31.8 def	7.3 cdef B	9.2 c A	5.8 defg B	7.4 cdef A
EX6	33.4 bcde	34.5 abcd	35.2 bcde	34.6 bcde	7.5 bcdef B	9.4 c A	7.1 bcde	7.5 cde
EX7	28.1 efg	29.9 cde	33.4 cdef	34.6 bcde	6.6 def	8.1 cd	6.0 defg B	7.2 cdefg A
EX8	30.2 cdef	32.4 bcde	32.6 cdef	29.4 ef	7.9 bcde	8.1 cd	6.1 defg	6.7 cdefg
EX9	18.8 hi B	27.8 def A	29.0 ef	32.3 cdef	6.8 def B	10.2 bc A	4.8 g B	6.7 cdefg A

^aYear after planting data represents the maximum average height after the study began on 30 June 2010.

^bMeans within columns with the same lowercase letter are not statistically different by the Tukey-Kramer test at $P \leq 0.05$.

^aSelection EX3 was planted one year later than the other selections at the Quincy location.

^wOnly means within rows for a given year with different uppercase letters are statistically different by the Tukey-Kramer test at $P \leq 0.05$.

(inferred in Table 4 but year comparison data not shown).

Canopy uniformity. A shade \times selection interaction occurred at Gainesville (Table 3), and only year 2 data were analyzed since plots did not reach full canopy cover during the first year of the study. A shade \times year interaction occurred at Quincy (Table 5). A majority of selections at both sites exhibited less uniform canopies (i.e., greater height variability) under shade compared with full sun, with the exception of EX8 at Gainesville and EX1 in year 3 at Quincy. However, at Quincy the variability under both light treatments tended to decrease from year 2 to year 3 (Table 5). Compared with forage types, ornamental types and EX1, EX3, EX5, and EX9 at Gainesville generally remained more uniform under shade. Most experimental selections at Quincy were more uniform than forage types in full sun. Released ornamentals at Quincy were generally less variable than forages in year 2, and EX1 and EX3 performed similar to released ornamentals.

Discussion

During year 1 at Gainesville, no selections achieved full cover, but nearly all selections did by year 2. Therefore, establishment of rhizoma peanut, as measured by full canopy cover, does not occur until at least a year following planting. This is also supported by data from the Quincy location, where nearly all selections achieved full cover during year 2. In addition, at Quincy, full cover did not occur any faster in year 3 than in year 2, implying that establishment as measured by rate of cover likely occurred as early as year 2. At both locations, maximum average height increased during the second year of the study, indicating that rhizoma peanut will likely continue to increase in height for at least 2 years following planting.

At both locations, narrow leaf types performed poorly as indicated by their failure to

reach full canopy cover or a relatively short duration of full cover. Therefore, they are less recommended for ornamental use based on the parameters of this study. 'Brooksville 67' and EX8 are recommended for ornamental use based, in part, on their fast rate of cover at both locations.

Selections recommended for ornamental use based on a long duration of full cover include 'Brooksville 67', 'Ecoturf', EX1, EX3, and EX8. Based on height data alone, released ornamentals 'Brooksville 67' and 'Brooksville 68', as well as experimental selections EX3, EX4, and EX9, showed the greatest ornamental potential as they generally achieved the lowest maximum height at both locations compared with forage types. 'Ecoturf' displayed a height intermediate between an ornamental and a forage type, confirming its recommendation as a dual-use cultivar. Both released and proposed ornamental types generally had less height variability than forage types; the use of these forage types for ornamental purposes is not supported by this study. Based on data from both locations, 'Brooksville 67', 'Brooksville 68', and EX3 are best suited for ornamental use due to their low canopy height variability. In summary, selections that have the greatest potential ornamental use across all tested variables in this study are 'Brooksville 67' and EX3, followed by 'Brooksville 68' and EX8. In addition, 'Ecoturf', EX1, EX4, and EX9 show some potential for ornamental use. Although preliminary observations suggested EX5 was best suited for ornamental use, it did not meet standards based on the tested variables in this study.

Canopy cover duration was affected most by rhizoma peanut selection. The 30% level of shade used in this experiment did not have a significant effect on either the time to reach full canopy cover or canopy cover duration, indicating that for these two variables, shaded plots performed relatively similar to those in

full sun. Shaded plots emerged later in the spring (possibly due to cooler soil temperatures) but full sun plots died back earlier in the fall (perhaps shade cloth provided cold and frost protection). As a result, successful ornamental performance may occur in both full sun and shaded conditions.

The shading of rhizoma peanut plots has a significant effect on both height and height variability, with shaded plots growing taller with less canopy uniformity. Both year and shade affected height to varying degrees among selections indicating selection might be an important consideration for use in sun vs. shaded conditions. However, the response was not consistent between locations. For example, at Quincy, very few selections showed height differences based on shade treatment, indicating that most selections perform equally in sun or 30% shade. In comparison, at Gainesville, which is ≈ 51 miles further south in latitude, nearly half of all selections grew taller under shade in year 2. At both locations, shaded plots demonstrated significantly more variability for most of the selections, indicating that an ornamentally desirable uniform canopy is less likely to occur under shaded conditions. Plots at Quincy are a year older and the interaction between shade and year implies that regardless of selection, effects of shade are less consistent from year to year. Testing of mature, fully established plantings are needed to determine if there are consistent trends from year to year.

Narrow leaf types performed poorly at the Gainesville location, possibly due to smaller root systems which were noted at transplanting. Unlike Quincy, where forage types had a slower rate of obtaining full cover than many of the ornamental types, forage types at Gainesville typically reached full cover at the same rate.

Some ornamental attributes of rhizoma peanut may be achieved by certain landscape management practices. Mowing may be particularly important for aesthetics and may

allow a wider range of rhizoma peanut germplasm to be used ornamentally. Maximum canopy height and height variability may be reduced through proper mowing methods; however, naturally low-growing selections have the potential to greatly reduce or eliminate mowing. In addition, since canopy cover parameters are not greatly affected by shade, achieving an ornamentally desirable low height and height variability through mowing would eliminate the negative effects of shade on these variables. Under full sun, rhizoma peanut responded well to mowing practices that were used to control height (Aldrich et al., 2012). Further testing is required to determine if mowing under shade will produce similar results. Finally, flowering characteristics as well as other ornamental aesthetic qualities of rhizoma peanut will play a critical role in recommending selections for ornamental use.

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