Controlled Release Fertilizer Evaluations – 1998

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Nature of Work: On March 20, 1998 three-inch *Rhododendron* 'Hinodegiri' and *Ilex crenata* 'Compacta' liners were potted up into trade gallons. The potting mix was bark/sand (6:1) with 10# of dolomitic lime and 2# gypsum per cubic yard. Seven 12 month controlled release fertilizers were incorporated into the potting mix. The fertilizer treatments included two rates, a low rate and a medium rate based on the amount of nitrogen per cubic yard. The fertilizers were incorporated in Hinodegiri Azaleas mix at 1.5# and 2.5# of actual nitrogen /yd^3 and in the Compacta Hollies at 2.5# and 3.5# of actual nitrogen /yd^3. Each fertilizer product was applied at an equal rate of nitrogen /yd^3 for each treatment. The fertilizer products included in this evaluation are listed below.

Wilbro	15-4-9	(Included Minors)
Wilbro	15-4-9EP	(Included Minors)
Scotts	15-9-12	(Added 2# Micromax)
Scotts	19-6-12E	(Added 2# Micromax)
Mister	20-6-15	(Included Minors)
Mister	21-5-12	(Included Minors)
Control	High N 23-4-8	(Added 2#Micromax)

On April 20, 1998, the Hinodegiri Azaleas treatments were spaced about 12" apart and two guard rows of potted Azaleas were placed around the outside of the randomized treatments. The Compacta Hollies were spaced in late July when the liner branches began to touch although the guard rows were in place in April. All treatments were completely randomized within crops. Plants were grown in full sun under standard nursery conditions throughout the season, providing adequate irrigation and pest control.

Leaf-tissue was sampled on July 23, 1998 and October 21, 1998 from three plants from each treatment and submitted for nutrient analysis at the University of Georgia Soil Testing Laboratory. The nutrient levels in the plant tissue show the uptake under the various treatments at mid- and end-of-season. A visual quality ranking of all treatments was conducted on October 7 by nurserymen and product representatives. On October 21, 1998, the tops of ten plants from each treatment were cut at the soil line and dried completely. The dry tops were weighed and used as the measure of growth for the 1998 season.

The treatments will be visually evaluated for quality again in February 1999, to determine the effectiveness of the 12 month products in holding the plants until spring. Results will be reported at that time.

Results and Discussion: The leaf tissue nutrient analysis for Hinodegiri Azalea collected July 23,1998 are presented in Table 1. The nitrogen (N below 1.5%) and phosphorous (P below 0.2%) levels were all low for all treatments (see Table 9 for suggested nutrient ranges). The potassium levels were slightly low (K below 0.8 %) for Scotts 19-6-12EP and the control High N 23-4-8 at both the 1.5# and 2.5#N/yd^3 rates. The calcium, magnesium, manganese, iron, boron and zinc were all within the acceptable range. The copper levels (Cu below 6 ppm) were slightly low for most treatments. The nitrogen levels generally increased from the low (1.5#N/yd^3) to medium (2.5#N/yd^3) fertilization rate.

The Azalea nutrient analysis for October 21, 1998 (Table 2) showed the nitrogen levels were adequate for all treatments at the 2.5#N/yd^3 rate and adequate for Scotts 15-9-12, Scotts 19-6-12E and High N 23-4-8 at the 1.5#N/yd^3 rate. All nitrogen levels increased from the low to the medium application rate. The phosphorous levels were low for all treatments. The potassium levels were with in the acceptable range for Meister 20-6-15, 1.5# and 2.5#N/yd^3; Wilbro 15-4-9, 2.5#N/yd^3 and Wilbro 15-4-9EP, 2.5#N/yd^3. The rest of the treatments were slightly low. The calcium, magnesium, manganese, iron, boron and zinc were within the acceptable range. The copper levels (Cu below 6 ppm) were slightly low for most treatments.

The Hinodegiri Azalea top growth dry weights (Figure 1) were analyzed by ANOV and the means statistically compared with the Student-Newman-Keuls Test at the .05 significance level. The dry weight means and their statistical separations are shown in Table 3. Figure 1 graphically represents the treatment means and the hatched bars represent the 1.5#N/yd^3 while the solid bars represent the 2.5 #N/yd^3 treatments. The greatest top growth was made by Meister 20-6-15, Scotts 19-6-12E, Wilbro 15-4-9, High N 23-4-8 and Wilbro 15-4-9EP all at 2.5#N/yd^3. The greatest top growth at 1.5#N/yd^3 rate was produced by Wilbro 15-4-9EP but it was not statistically different from the five treatments with immediately lower dry weight.

The azalea visual quality ranking evaluation done on October 7, 1998 is shown in Figure 2. Twelve professionals ranked ten plants for each treatment as excellent, good, acceptable, marginal and poor. A ranking score of 20 was acceptable, 40 was excellent and 0 was poor. The average of all the rankings (Table 4) are presented, however no statistical analysis was conducted. The treatment order in Figure 2 was maintained the same as in Figure 1 for ease of comparison. The five treatments with the greatest dry weight (Meister 20-6-15, Scotts 19-6-12E, Polyon15-4-9, High N 23-4-8 and Wilbro 15-4-9EP all at 2.5#N/yd^3) ranked highest for visual quality. The Polyon15-4-9EP, 1.5#N/yd^3 that produced 49.5g dry weight did not maintain a comparable quality ranking.

The Compacta Holly nutrient analysis for July 23 are presented in Table 5 with the suggested nutrient range in Table 10 (slightly different from the azalea table). The nitrogen (N below 1.5%) levels were slightly low for Scotts 15-9-12, 2.5# and 3.5#N/yd^3, and Scotts 19-6-12E, 2.5#N/yd^3. The nitrogen levels increased from the 2.5# to the 3.5#N/yd^3 on all treatments, except for Wilbro 15-4-9, Meister 20-6-12 and High N 23-4-8. The phosphorous (P below 0.2%) and potassium (K below 1.5%) were mostly low at the 2.5#N/yd^3 rate, except for Wilbro 15-4-9. At the 3.5#N/yd^3 rate only Scotts 15-9-12, Meister 21-5-12 and High N 23-4-8 were low. The calcium, magnesium, iron and boron were within the acceptable range. Manganese and zinc were all high

(probably due to fungicide residue on the foliage) while copper (Cu below 6.0 ppm) was mostly low on all treatments, except for Scotts 19-6-12E, 2.5# and 3.5#N/yd^3; High N 23-4-8, 2.5# and 3.5#N/yd^3, Meister 20-6-15, 3.5#N/yd^3 and Meister 21-5-12, 3.5#N/yd^3.

The October 21 Compacta Holly nutrient analysis (Table 6) show nitrogen, calcium and magnesium for all treatments with in the acceptable range. The nitrogen levels increased from the 2.5# to the 3.5#N/yd^3 rates on all treatments. The phosphorous (P below 0.2%) and potassium (K below 1.5%) levels were low for all treatments. The manganese and zinc levels were all high again due to fungicide residue on the foliage. The boron and copper were low for most treatments. Boron levels for Scotts 15-9-12, 2.5# and 3.5#N/yd^3 were acceptable. Copper levels for Scotts 19-6-12E, 2.5# and 3.5#N/yd^3 and High N 23-4-8, 2.5# and 3.5#N/yd^3 were acceptable.

The Compacta Holly top growth dry weights in Figure 3 were treated the same as the azalea data, and the means and statistical comparisons are in Table 7. The hatched bars represent the 2.5#N/yd^3 treatments and the solid bars represent the 3.5#N /yd^3 treatments. The dry weights show no great separation of individual treatments or of rate treatments. The High N 23-4-8, 2.5#N/yd^3 produced more dry weight than most of the 3.5#N/yd^3 treatments. The Wilbro 15-4-9 at 3.5#N/yd^3 was down with the low rate treatments. Generally the 3.5#N/yd^3 rate produced more top growth than the 2.5#N/yd^3 rate.

The quality rankings for the Compact Holly are shown in Figure 4 with the means and rankings presented in Table 8. Presentation and treatment are the same as for the azaleas. The 3#N/yd^3 rate appears strongly separated from the 2.5#N/yd^3 rate, with the exception of High N 23-4-8, 2.5#N/yd^3. The Wilbro 15-4-9, 3.5#N/yd^3 treatment was ranked similarly to the 2.5#N/yd^3 treatments. The treatments with a "good" quality rating (above 30) include Scotts 15-9-12, 3.5#N/yd^3;, Meister 20-6-15, 3.5#N/yd^3, High N 23-4-8, 2.5#N/yd^3; Meister 21-5-12, 3.5#N/yd^3; High N 23-4-8, 3.5#N/yd^3 and Wilbro 15-4-9EP, 3.5#N/yd^3.

Significance to the Industry: Providing the best fertilizer products at a reasonable cost for our nursery crops is the goal of many of our fertilizer manufactures and product representatives. Our evaluation of products this year focused upon evaluating 12 month products, incorporated in the potting mix of Hinodegiri Azalea and Compacta Holly. The fertilizers were incorporated in the azalea mix at 1.5#N/yd^3 and 2.5#N/yd^3 and in the holly mix at 2.5#N/yd^3 and 3.5#N/yd^3 to represent a low and medium rate of nitrogen. Nutrition was monitored with leaf tissue analysis in July and October for all treatments. Plant top dry weight and a visual quality ranking were used to judge growth and quality.

The Hinodegiri Azalea were low in nitrogen in July for all treatments and adequate in October for the 2.5#N/yd^3 rate. The top dry weights had five superior treatments and the visual quality rating had the same five treatments ranked as good to excellent (32.1-37.4). These treatments, all at the 2.5#N/yd^3 rate, were Meister 20-6-15, Scotts 19-6-12E, Wilbro 15-4-9, High N 23-4-8 and Wilbro 15-4-9EP. At the 1.5#N/yd^3 rate the quality rating was mostly acceptable, with a few products ranked lower. The 2.5#N/yd^3 rate produced higher quality plants, as expected.

The Compacta Holly treatments had mostly acceptable tissue nitrogen levels in July and all were acceptable in October. The top dry weights showed no great separation of individual treatments. The 3.5#N/yd^3 rate was generally better for quality except for the Wilbro 15-4-9. However High N 23-4-8 at 2.5#N/yd^3 was third from the top in overall dry weight and forth from the top in quality, making it an outstanding performer. The only treatments better in dry weight and/or quality were Meister 21-5-12, Wilbro 15-4-9EP and High N 23-4-8 all at the 3.5#N/yd^3.

Overall on both crops, the most consistent products producing the most growth and best quality were Meister 20-6-15, Scotts 19-6-12E, Wilbro 15-4-9EP, and the control, High N 23-4-8.

Table 1. 1998 Hinodegiri Azalea Controlled Release Fertilizer Evaluations
Leaf Tissue Nutrient Analysis / July 23,1998

Treatment		Rate	N*	P	K	Ca	Mg	Mn	Fe	B	Cu	Zn
Wilbro	15-4-9	1.5#N/yd^3	.89	.16	.81	.99	.34	227	66	38	5.3	29
Wilbro	15-4-9EP	1.5#N/yd^3	.57	.15	.87	.77	.27	197	56	34	5.3	25
Scotts	15-9-12	1.5#N/yd^3	.31	.14	.92	.89	.32	204	59	64	5.8	27
Scotts	19-6-12E	1.5#N/yd^3	.76	.15	.77	.90	.31	233	56	63	6.0	31
Meister	20-6-15	1.5#N/yd^3	.34	.14	.93	.83	.28	260	60	69	5.8	24
Meister	21-5-12	1.5#N/yd^3	.78	.09	.93	.66	.23	158	60	52	6.5	23
High N	23-4-8	1.5#N/yd^3	.71	.10	.70	.80	.29	222	54	57	7.0	30
Wilbro	15-4-9	2.5#N/yd^3	.71	.18	.94	.79	.28	164	70	31	5.2	24
Wilbro	15-4-9EP	2.5#N/yd^3	1.42	.15	.97	.71	.23	206	62	33	4.8	25
Scotts	15-9-12	2.5#N/yd^3	.44	.11	.90	.86	.32	194	54	53	5.5	22
Scotts	19-6-12E	2.5#N/yd^3	1.08	.14	.77	.93	.30	240	59	47	6.3	28
Meister	20-6-15	2.5#N/yd^3	.95	.16	.96	.78	.26	180	62	50	5.6	23
Meister	21-5-12	2.5#N/yd^3	1.01	.09	.99	.64	.22	202	62	47	6.9	27
High N	23-4-8	25#/Nyd^3	.98	.15	.67	.90	.30	287	181	54	7.7	68

* N, P, K, Ca and Mg are percent,
Mn, Fe, B, Cu, Zn are ppm

Table 2. 1998 Hinodegiri Azalea Controlled Release Fertilizer Evaluations
Leaf Tissue Nutrient Analysis / October 21, 1998

Treatment		Rate	N*	P	K	Ca	Mg	Mn	Fe	B	Cu	Zn
Wilbro	15-4-9	1.5#N/yd^3	1.44	.16	.70	1.08	.39	182	57	26	5.0	29
Wilbro	15-4-9EP	1.5#N/yd^3	1.44	.12	.69	1.11	.39	216	72	26	4.9	30
Scotts	15-9-12	1.5#N/yd^3	1.50	.08	.75	.91	.31	200	58	53	6.1	29
Scotts	19-6-12E	1.5#N/yd^3	1.59	.13	.71	1.18	.36	281	55	36	6.4	42
Meister	20-6-15	1.5#N/yd^3	1.05	.12	.87	1.04	.34	154	52	40	4.2	32
Meister	21-5-12	1.5#N/yd^3	1.26	.06	.62	.89	.33	193	52	34	6.1	28
High N	23-4-8	1.5#N/yd^3	1.68	.10	.58	1.08	.35	290	59	34	8.2	42
Wilbro	15-4-9	2.5#N/yd^3	1.60	.16	.80	1.18	.37	223	56	22	4.1	27
Wilbro	15-4-9EP	2.5#N/yd^3	1.92	.14	.91	1.12	.32	213	61	22	4.6	30
Scotts	15-9-12	2.5#N/yd^3	1.79	.11	.73	1.00	.35	193	61	52	6.0	28
Scotts	19-6-12E	2.5#N/yd^3	1.79	.14	.78	1.00	.31	207	58	24	6.4	36
Meister	20-6-15	2.5#N/yd^3	1.59	.17	.99	.91	.31	213	68	37	5.3	34
Meister	21-5-12	2.5#N/yd^3	1.73	.09	.65	1.06	.33	280	60	31	5.7	30
High N	23-4-8	25#/Nyd^3	1.97	.10	.68	1.13	.34	367	52	27	7.8	39

* N, P, K, Ca, and Mg are percent,
Mn, Fe, B, Cu, Zn are ppm

Table 3. Hinodegiri Azalea Average Dry Weights

#	Fertilizer Treatments	Rates	Mean Weight	Statistical Differences*
1.	Meister 21-5-12	1.5#N/yd	32.3	a
2.	Scotts 15-9-12	1.5#N/yd	38.4	b
3.	Scotts 19-6-12E	1.5#N/yd	43.0	bc
4.	High N 32-4-8	1.5#N/yd	44.0	bc
5.	Meister 20-6-15	1.5#N/yd	45.7	bc
6.	Wilbro 15-4-9	1.5#N/yd	47.6	c
7.	Scotts 15-9-12	2.5#N/yd	47.9	c
8.	Meister 21-5-12	2.5#N/yd	47.9	c
9.	Wilbro 15-4-9EP	1.5#N/yd	49.5	c
10.	Meister 20-6-15	2.5#N/yd	59.0	d
11.	Scotts 19-6-12E	2.5#N/yd	59.3	d
12.	Wilbro 15-4-9	2.5#N/yd	60.6	d
13.	High N 23-4-8	2.5#N/yd	60.7	d
14.	Wilbro 15-4-9EP	2.5#N/yd	67.0	d

*Treatment means sharing the same letter are not statistically different from each other using Student-Newman-Keuls Test at the .05 significance level**.**

Table 4. Hinodegiri Azalea Visual Quality Rankings

#	Fertilizer Treatments	Rates	Mean Ranking
1.	Meister 21-5-12	1.5#N/yd	9.7
5.	Scotts 15-9-12	1.5#N/yd	20.6
7.	Scotts 19-6-12E	1.5#N/yd	23.2
6.	High N 32-4-8	1.5#N/yd	22.4
2.	Meister 20-6-15	1.5#N/yd	18.2
4.	Wilbro 15-4-9	1.5#N/yd	20.5
8.	Scotts 15-9-12	2.5#N/yd	29.1
9.	Meister 21-5-12	2.5#N/yd	29.8
3.	Wilbro 15-4-9EP	1.5#N/yd	20.3
10.	Meister 20-6-15	2.5#N/yd	32.1
12.	Scotts 19-6-12E	2.5#N/yd	35.2
11.	Wilbro 15-4-9	2.5#N/yd	32.8
13.	High N 23-4-8	2.5#N/yd	36.2
14.	Wilbro 15-4-9EP	2.5#N/yd	37.4

Table 5. 1998 Compacta Holly Controlled Release Fertilizer Evaluations
Leaf Tissue Nutrient Analysis / July 23,1998

Treatment		Rate	N*	P	K	Ca	Mg	Mn	Fe	B	Cu	Zn
Wilbro `	15-4-9	2.5#N/yd^3	1.63	.22	1.50	.62	.42	781	55	43	5.1	204
Wilbro `	15-4-9EP	2.5#N/yd^3	1.57	.17	1.49	.59	.41	823	63	45	3.7	264
Scotts	15-9-12	2.5#N/yd^3	1.11	.17	1.34	.59	.47	374	53	56	5.8	214
Scotts	19-6-12E	2.5#N/yd^3	1.46	.17	1.32	.56	.42	512	56	40	9.0	337
Meister	20-6-15	2.5#N/yd^3	1.74	.17	1.43	.51	.36	689	77	40	5.5	336
Meister	21-5-12	2.5#N/yd^3	1.56	.13	1.30	.53	.42	457	67	44	4.2	286
High N	23-4-8	2.5#N/yd^3	1.79	.16	1.28	.54	.44	419	28	45	7.6	367
Wilbro`	15-4-9	3.5#N/yd^3	1.55	.22	1.58	.57	.34	1195	51	40	5.6	336
Wilbro `	15-4-9EP	3.5#N/yd^3	1.62	.22	1.70	.54	.34	1257	50	38	4.7	416
Scotts	15-9-12	3.5#N/yd^3	1.21	.17	1.39	.52	.40	408	51	54	6.2	207
Scotts	19-6-12E	3.5#N/yd^3	1.66	.18	1.50	.58	.39	750	56	40	9.0	400
Meister	20-6-15	3.5#N/yd^3	1.57	.20	1.60	.55	.34	1265	67	42	7.0	364
Meister	21-5-12	3.5#N/yd^3	1.60	.16	1.30	.54	.41	553	69	44	3.7	260
High N	23-4-8	35#/Nyd^3	1.58	.17	1.22	.52	.41	437	89	41	7.4	300

* N, P, K, Ca and Mg are percent,
Mn, Fe, B, Cu, Zn are ppm

Table 6. 1998 Compacta Holly Controlled Release Fertilizer Evaluations
Leaf Tissue Nutrient Analysis / October 21, 1998

Treatment		Rate	N*	P	K	Ca	Mg	Mn	Fe	B	Cu	Zn
Wilbro	15-4-9	2.5#N/yd^3	1.75	.10	.82	1.04	.38	986	37	27	3.5	209
Wilbro	15-4-9EP	2.5#N/yd^3	1.99	.12	.86	1.03	.34	1032	37	22	3.0	271
Scotts	15-9-12	2.5#N/yd^3	2.19	.13	.91	.94	.40	593	54	54	4.0	180
Scotts	19-6-12E	2.5#N/yd^3	1.87	.10	.86	.90	.38	893	43	31	6.8	395
Meister	20-6-15	2.5#N/yd^3	1.50	.08	.67	.87	.33	818	50	29	2.4	370
Meister	21-5-12	2.5#N/yd^3	1.98	.10	.57	.92	.36	931	46	27	2.1	241
High N	23-4-8	2.5#N/yd^3	2.28	.12	.61	.86	.39	702	44	23	6.0	328
Wilbro	15-4-9	3.5#N/yd^3	2.10	.09	.90	1.01	.30	1343	37	21	3.9	301
Wilbro	15-4-9EP	3.5#N/yd^3	2.16	.12	.82	.84	.28	1171	78	21	2.4	271
Scotts	15-9-12	3.5#N/yd^3	2.35	.11	.98	.92	.35	659	68	48	5.1	190
Scotts	19-6-12E	3.5#N/yd^3	2.21	.13	.88	.92	.29	1281	50	20	6.9	459
Meister	20-6-15	3.5#N/yd^3	1.90	.12	.83	.88	.26	1138	55	20	3.6	435
Meister	21-5-12	3.5#N/yd^3	2.15	.10	.63	.90	.31	1180	51	21	2.9	210
High N	23-4-8	3.5#N/yd^3	2.47	.13	.67	.77	.29	990	39	18	6.0	333

* N, P, K, Ca and Mg are percent,
Mn, Fe, B, Cu, Zn are ppm

Table 7. Compacta Holly Average Dry Weights

# Fertilizer Treatments	Rates	Mean Weight	Statistical Differences*
1. Wilbro 15-4-9	2.5#N/yd	33.6	a
2. Scotts 15-9-12	2.5#N/yd	34.1	a
3. Meister 21-5-12	2.5#N/yd	35.6	ab
4. Scotts 19-6-12E	2.5#N/yd	36.8	ab
5. Wilbro 15-4-9	3.5#N/yd	38.2	abc
6. Wilbro 15-4-9EP	2.5#N/yd	38.9	abc
7. Meister 20-6-15	2.5#N/yd	39.7	abc
8. Meister 21-5-12	3.5#N/yd	40.4	abcd
9. Scotts 15-9-12	3.5#N/yd	41.5	abcde
10. Meister 20-6-15	3.5#N/yd	43.8	bcde
11. Scotts 19-6-12E	3.5#N/yd	44.1	bcde
12. High N 23-4-8	2.5#N/yd	46.3	cde
13. Wilbro 15-4-9EP	3.5#N/yd	48.7	de
14. High N 23-4-8	3.5#N/yd	48.8	e

*Treatment means sharing the same letter are not statistically different from each other using Student-Newman-Keuls Test at the .05 significance level**.**

Table 8. Compacta Holly Average Visual Quality Rankings

# Fertilizer Treatments	Rates	Mean Ranking
3. Wilbro 15-4-9	2.5#N/yd	20.7
1. Scotts 15-9-12	2.5#N/yd	19.1
2. Meister 21-5-12	2.5#N/yd	20.2
6. Scotts 19-6-12E	2.5#N/yd	23.0
4. Wilbro 15-4-9	3.5#N/yd	21.1
7. Wilbro 15-4-9EP	2.5#N/yd	24.8
5. Meister 20-6-15	2.5#N/yd	22.0
12. Meister 21-5-12	3.5#N/yd	32.6
9. Scotts 15-9-12	3.5#N/yd	30.0
10. Meister 20-6-15	3.5#N/yd	30.5
8. Scotts 19-6-12E	3.5#N/yd	29.0
11. High N 23-4-8	2.5#N/yd	32.1
14. Wilbro 15-4-9EP	3.5#N/yd	35.3
13. High N 23-4-8	3.5#N/yd	34.6

Table 9. Azalea Suggested Nutrient Concentration Ranges*

Nutrient	Range
Nitrogen (N)	1.50-3.00 %**
Phosphorous (P)	0.20-0.60 %
Potassium (K)	0.80-1.60 %
Calcium (Ca)	0.20-1.60 %
Magnesium (Mg)	0.17-0.50 %
Manganese (Mn)	30-300 ppm
Iron (Fe)	50-150 ppm
Boron (B)	20-100 ppm
Copper (Cu)	6-15 ppm
Zinc (Zn)	15-60 ppm

*From Plant Analysis Handbook for Georgia, C. Owen Plank, 1989, Cooperative Extension Service, The University of Georgia.
**Modified from Plant Analysis Handbook II, Harry A. Mills and J. Benton Jones Jr., 1996, MicroMacro Publishing.

Table 10. Holly Suggested Nutrient Concentration Ranges*

Nutrient	Range
Nitrogen (N)	1.50-3.50 %
Phosphorous (P)	0.20-0.60 %
Potassium (K)	1.50-3.50 %
Calcium (Ca)	0.50-2.50 %
Magnesium (Mg)	0.20-1.00 %
Manganese (Mn)	30-300 ppm
Iron (Fe)	50-300 ppm
Boron (B)	30-50 ppm
Copper (Cu)	6-40 ppm
Zinc (Zn)	30-75 ppm

*From Plant Analysis Handbook for Georgia, C. Owen Plank, 1989, Cooperative Extension Service, The University of Georgia.

Figure 1. Hinodegiri Azalea Fertilizer Evaluations
Top Growth

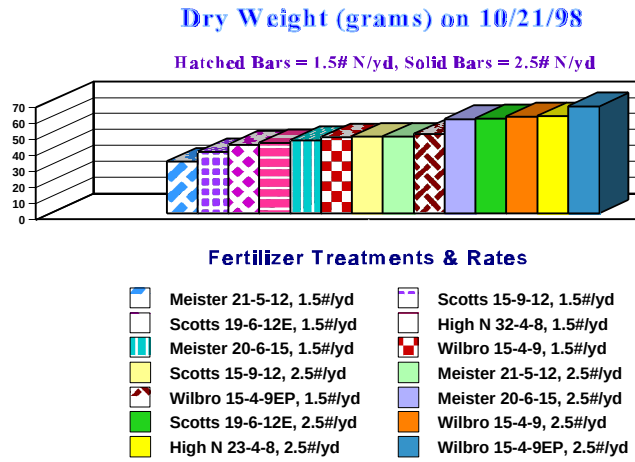

Figure 2. Hinodegiri Azalea Fertilizer Evaluations
Nurserymen's Visual Quality Ranking

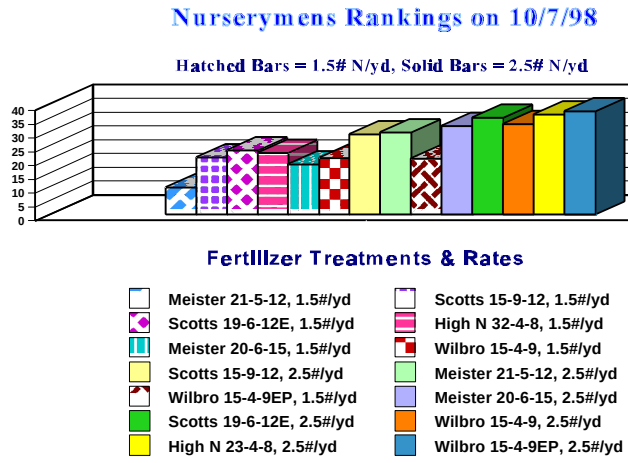

Figure 3. Compacta Holly Fertilizer Evaluations
Top Growth

Figure 4. Compacta Holly Fertilizer Evaluations
Nurserymen's Visual Quality Ranking