



Evaluation of Wilbro Organic Liquid-Feed (Organic Blood and Bone)

Dr. James T. Midcap
Department of Horticulture
The University of Georgia
Athens, GA 30602

Nature of Work:

Wilbro Organic Liquid-Feed 8-7-7 Plus Minerals and Trace Elements is promoted for use to produce healthy robust seedling, flowers, trees, etc. It will mix readily with water to provide a carefully balanced fertilizer which is rapidly assimilated through both foliage as well as root systems. It is also useful wherever plants are stressed due to adverse climatic conditions, nutrient deficiencies, or transplant shock as stated in their literature.

Wilbro 8-7-7 was applied as a foliar spray diluted 1:200 with water and applied once each month to runoff. Peters 20-20-20 with minors was applied at 150 ppm at the same time and method. The Control of no foliage spray was included. *Abelia grandiflora* and *Lagerstroemia x Natchez* cuttings were direct stuck in trade gallons filled with a bark sand mix (6:1) and rooted under mist. Plants were moved outside on the gravel bed on May 31, 2000 and the first applications were made one week later. Wilbro 8-7-7 and Peters 20-20-20 were applied every four weeks for the rest of the season. The potting mix was amended with 14# Osmocote Pro 23-4-8 (medium rate), 1.5# Micromax and 4# dolomitic lime. There were 20 replicates and all treatments were randomized. Two rows of border plants were placed on the out side edge of the treatments. The plants were maintained under normal nursery conditions, in good health and weed free.

A complete nutrient analysis of the potting mix and leaf tissue samples were done in late October at the end of the trial. A combined sample from three pots in each treatment were collected for both the potting mix and the leaf samples. These analysis should show the nutritional status of the media and the plants at seasons end.

A visual quality rating by nurserymen and myself were done on twenty plants of each treatment for each crop. The quality rating helps to determine if the treatments would be acceptable in the nursery trade. The quality rating was completed at the end of the growing season on October 31, 2000.

The crops were harvested in late October with ten replicates for each treatment. All top growth was removed at the soil line, placed in paper bags and placed in a walk-in dryer for two weeks at 120°F. The plant stems and leaves were completely dry and were weighed to record the plant dry weight. This dry weight accurately reflects the growth of the crops during the production season and is used to statistically compare growth of the treatments.

Results and Discussion:

The abelia plants were pruned back to 8" tall and to the side of the pot in mid July. The leaves and stems removed during pruning were dried and weighed. The Wilbro 8-7-7 spray produced 14.6 grams of average dry weight per pot. The Peters 20-20-20 Foliar Spray produced 13.6 grams and the control produced 13.8 grams of average dry weight per pot. There was no significant differences between these treatments. Several plants in the Wilbro 8-7-7 treatment were showing some leaf browning on 8/31/2000. The crape myrtle plants were propagated later and were not pruned this season. No leaf injury was observed on any of the crape myrtle.

The nutritional analysis of the potting mix and leaf tissue was done in late October. The analysis was done for each treatment within each crop. The results on the Abelia crop are reported in Tables 1 & 2. The pH of the potting mix was lower than expected, however we used a lower initial lime rate. The soluble salts, NO₃ and NH₄ nitrogen, phosphorous and potassium in the potting mix were all in the acceptable range for all treatments. The calcium and magnesium levels were low for all treatments. The Peters 20-20-20 Foliar Spray elevated the nutrient levels of all nutrients over the No Foliar Spray treatment. The Wilbro 8-7-7 treatment nearly matched the No Foliar Spray for all nutrients.

The Abelia leaf tissue had acceptable levels of nitrogen, calcium, magnesium, iron, manganese and zinc for all treatments. The phosphorous, potassium, boron and copper levels were all low for all treatments. The phosphorous and potassium were available in the potting mix, but must not have been taken up in sufficient quality to increase the leaf tissue values. The calcium and magnesium tissue levels indicate these elements are running out in the potting mix at the end of the season.

Fertilizer Treatments	No Foliar Spray	Peters 20-20-20 Foliar Spray	Wilbro 8-7-7 1:200 Dilution
pH	4.1	4.0	4.2
SS (<i>mmhos</i>)	0.8	1.3	0.8
NO ₃ (<i>ppm</i>)	40	77	43
NH ₄ (<i>ppm</i>)	23	52	30
P (<i>ppm</i>)	8.8	13.8	15.1
K (<i>ppm</i>)	40	72	39
Ca (<i>ppm</i>)	34	54	34
Mg (<i>ppm</i>)	13	17	11

Table 2. Abelia Leaf Tissue Nutritional Analysis B October 2000			
Fertilizer Treatments	No Foliar Spray	Peters 20-20-20 Foliar Spray	Wilbro 8-7-7 1:200 Dilution
N (%)	1.6	1.5	1.9
P (%)	0.1	0.1	0.2
K (%)	0.7	0.7	1.0
Ca (%)	0.7	0.7	0.6
Mg (%)	0.3	0.3	0.3
B (ppm)	16	18	16
Cu (ppm)	2.3	1.8	1.2
Fe (ppm)	69	60	54
Mn (ppm)	230	250	212
Zn (ppm)	50	53	52

The nutritional analysis of the potting mix and leaf tissue for the Natchez Crape Myrtle are reported below. The pH for the potting mix was again low. All potting mix nutrients were in the acceptable range, except for calcium which was low and magnesium which was slightly low. The all leaf tissue nutrient levels were acceptable for the nitrogen, calcium, magnesium iron, manganese and zinc. The phosphorous was acceptable for the No Foliar Spray treatment and low for both foliar spray treatments. The potassium, boron and copper levels were low for all treatments. These results are nearly identical to the Abelia results.

The quality ratings range from the high score of 100 for all excellent plants, a medium score of 60 for all average plants and a low score of 20 for all poor plants. The results of evaluating 20 plants from each treatment in October 2000 are presented in Table 5. The Wilbro 8-7-7 produced the highest quality Abelias when compared to the Peters 20-20-20 Foliar Spray and the No Foliar Spray. The plants from the Wilbro 8-7-7 treatment were slightly larger, much more dense and rated very good. There were also many more flowers on the Wilbro 8-7-7 treated Abelias. The Crape Myrtle crop was more difficult to judge. The No Foliar Spray appeared slightly better than the Wilbro 8-7-7, which was better than the Peters 20-20-20.

Table 3. Abelia & Crape Myrtle Quality Ratings*			
Treatment	No Foliar Spray	Peters 20-20-20 Foliar Spray	Wilbro 8-7-7 1:200 Dilution
Abelia	75.3	77.3	84.7
Crape Myrtle	79.3	74.7	77.0

*Excellent = 100, Good = 80, Average = 60, Questionable = 40 and Poor = 20

The plant top dry weight (grams) was recorded at the end of the production season in late October (Tables 4 & 5). In both the Abelia Crape Myrtle crops, the Wilbro 8-7-7 treatments produced greater top dry weight than the No Foliar Spray and the Peters 20-20-20 Foliar Spray treatments. Larger dry weight means greater growth produced during the production season.

Table 4. Abelia Dry Weight Statistical Analysis

Treatment	Mean Weight (g)	Non-Significant Range*
No Foliar Spray	39.7	a
Peters 20-20-20 Foliar Spray	41.7	a
Wilbro 8-7-7 1:200 Dilution	48.2	b

*Treatments means sharing the same letter are not significantly different using the Student-Newman-Keuls test.

Table 5. Crape Myrtle Dry Weight Statistical Analysis

Treatment	Mean Weight (g)	Non-Significant Range*
No Foliar Spray	34.5	a
Peters 20-20-20 Foliar Spray	35.9	a
Wilbro 8-7-7 1:200 Dilution	40.2	b

*Treatments means sharing the same letter are not significantly different using the Student-Newman-Keuls test.

Summary:

The direct stuck cuttings of *Abelia grandiflora* and *Lagerstroemia x Natchez* were rooted under mist and moved on to a sunny gravel pad. An Osmocote 23-4-8 at 14# / yd³ was incorporated in the potting mix. Supplemental nutrient foliar sprays were evaluated using Wilbro Organic Liquid-Feed 8-7-7 and Peters 20-20-20 with minors. The potting mix and leaf tissue were monitored for nutrients in late October 2000. The plants were visually rated for quality at seasons end. The crops were harvested and top dry weight was determined.

The Abelia potting mix had adequate levels of all nutrients except calcium and magnesium which were about depleted by the end of the production season. The tissue levels were all acceptable except for phosphorous, potassium, boron and copper. The uptake of phosphorous and potassium appear to have slowed late in the year. The calcium and magnesium levels were acceptable.

The Crape Myrtle potting mix had adequate levels of all nutrients except calcium and magnesium. The leaf tissue nutrient levels were acceptable for all except phosphorous, potassium, boron and copper.

These results matched the Abelia results.

The quality rankings placed Wilbro 8-7-7 treatment for the Abelia crop better than the other two treatments. These plants looked larger, more dense and had greater numbers for flowers. For the Crape Myrtles, the No Foliar Spray was ranked best, followed by the Wilbro 8-7-7 treatment. All treatments in both crops were judged to be above average in quality.

The top dry weight of both crops was greatest with the Wilbro 8-7-7 treatment. There were no differences between the Peters 20-20-20 and the No Foliar Spray treatment. More growth was produced by both crops, although only the Abelias were ranked best in nursery quality.

The results of the quality ranking and top dry weight indicate the Wilbro Organic Liquid-Feed 8-7-7 is effective in producing better *Abelia grandiflora* and *Lagerstroemia x Natchez* with five applications (each four week apart) during the production season. Wilbro 8-7-7 was more effective in producing better quality plants than foliar sprays of Peters 20-20-20 with minors. This product could prove beneficial on nursery crops needing an extra boost during the production season.